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RABIES AND ITS PREVENTIVE TREATMENT: AN ANALYSIS OF CASES.¹

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I BELIEVE hydrophobia to be a rare disease in the human being, but comparatively frequent in certain animals. I make this statement only after a careful study of the subject during a period of about two years. I have studied reports of cases appearing in Germany, Austria, France, and England, and of investigations in rabies which have been made in those countries.

In this country the subject has received more attention of late years, and although there is still some confusion and many wrong ideas in regard to the nature of rabies, investigators who have studied the disease thoroughly and scientifically agree in all essential points. That there are a great many wrong impressions in regard to the disease and its various manifestations is apparent to nearly all of us. Medical men and men outside the profession with only a superficial knowledge of the subject, expound their views and give most learned opinions on the least provocation in a way which makes one who realizes the vastness of the subject almost envious. Before entering into a discussion of the three divisions of this paper, I wish to say a few words about some of the obstacles to be overcome in obtaining a clear idea of a rare but nevertheless important disease.

On February 4, 1899, a dog on Staten Island bit three people; a "mad-dog" scare was started, and many people were considerably alarmed. Perhaps the dog was mad; perhaps it wasn't; all dogs which bite people are not mad. However, as there had been several mad-dog scares before on Staten Island, some of which were well founded, as I will show you presently, it seemed very important on account of those bitten and for the future welfare of the people in that part of the city to prove whether or not the dog died of rabies. The dog was captured by the agents of the Society for the Prevention of Cruelty to Animals and confined. During its confinement of between two and three days it

showed some symptoms which could be produced either by rabies or by one of several other diseases. It died on February 7th, three days after the people were bitten, and was sent, not to the Department of Health Laboratory, but to another laboratory. So far so good; it made no difference to us whether the examination was made in one place or another so long as it was done thoroughly and according to the best scientific teaching. We learned, however, that no inoculation-tests were to be made, and as these tests are the only reliable ones we have at present, to prove the presence or the absence of the disease in a suspected animal, I applied by telephone to the president of the Society for a part of the medulla and spinal cord of this dog, explaining to him that the above-mentioned test was absolutely the only one at present relied upon by scientists to prove the presence or absence of rabies. I said I was especially anxious to obtain a portion of this dog's medulla for inoculations into three or four guinea-pigs, first, because there had been several cases of rabies on Staten Island in dogs during the past eighteen months which had been demonstrated to be the cause of death by the inoculation-test and the records of which I have; and, second, the three persons bitten were in an extremely nervous state, particularly a girl of fourteen, who was bitten slightly through her sleeve, and to whom, owing to her very nervous state, I decided not to give the Pasteur preventive treatment.

I told the president of these cases, and what a bad mental state the girl was in. I said it is of the greatest moment to make the inoculations, for if I could inform this girl in eight to sixteen days that the dog had not been mad, as was quite possibly the case, it would be of the greatest advantage to her. No one can realize how a person may become demoralized after being bitten by a dog, possibly rabid, until they have seen several such cases. To all of my reasoning the only satisfaction I received was that I could have a piece of the medulla for microscopic study, but not for inoculation into animals. The scientific fact that the inoculation-test is the only one upon which in the present state of our knowledge of the pathology of the disease we can place any reliance, had no effect on the position of the president of the Society. He also said that he did not deny the existence of rabies in animals, but considered it very rare. The physician

¹ Read before the Medical Section of the New York Academy of Medicine, February 21, 1899.

who attempts to rule out certain diseases on account of their rarity soon makes a mistake, and could not in any sense of the word be called scientific. The case he is diagnosing may be the very disease he is ruling out on account of its rarity. But for a minute considering the disease rabies as rare in animals, is it justifiable to jeopardize the mental and physical welfare of these persons and take away from them the possibility of great mental comfort which would have come if the inoculation had been made with negative result, a most probable outcome? Instead of this these people will be kept

autopsy certified in the daily press in an open letter from the president of the Society that these were the facts, but do not show one line of evidence that the dog did not have both rabies and the worms in the heart; two diseases have been combined in one body before now. The reason they could give no evidence in regard to the presence or absence of rabies was because there is no change so far detected sufficiently pathognomonic of the disease. If any one has found such changes sufficiently distinct on which to base a diagnosis he has kept such a fact modestly to himself.

TABLE I.—PATIENTS GIVEN PASTEUR TREATMENT FROM MARCH 5, 1898, TO MARCH 5, 1899.

No. of Patient and Age.	Date of Supposed Infection.	Location of Injury.	Cautery and How Soon.	Date of Beginning Treatment.	No. of Injections.	Dog Proved Rabid.	Result.	General Remarks.
1—51 years.	1898. Feb. 7.	28 bites, both hands and arms.	None used.	Mch. 5.	24	Yes.	Death.	Arms and hands badly lacerated.
2—23 "	Feb. 7.	9 bites on arm through clothes.	Stick silver nitrate in 5 minutes.	Mch. 5.	20	"	Recovery.	Same dog as in Case 1.
3—38 "	Mch. 16.	Right thumb and hand, glove.	Silver nitrate same day.	Mch. 19.	19	"	"	Bites rather slight.
4—6 "	Mch. 16.	One bite on hand.	Silver nitrate same day.	Mch. 19.	20	"	"	Same dog as in Case 1.
5—38 "	Apr. 25.	Bite on forehead.	Actual, 1½ hours after.	May 21.	23	"	"	Injury slight. Bite half an inch long.
6—19 "	June 20.	3 bites, left leg and thigh.	Silver nitrate in ½ hour.	June 22.	12 ¹	"	"	Abscess formed at seat of injection.
7—32 "	Nov. 29 to Dec. 1.	2 points on hand.	Nitric acid, 24—60 hours.	Dec. 3.	23	"	"	Treatment sent to physician in charge.
8—30 "	Nov. 29 to Dec. 1.	Hand, possibly lip.	Nitric acid, 24—60 hours.	Dec. 3.	23	"	"	Same dog as in Case 7.
9—55 "	Nov. 29 to Dec. 1.	Hand.	Nitric acid, 24—60 hours.	Dec. 3.	23	"	"	" " "
10—25 "	Nov. 29 to Dec. 1.	Hand.	Nitric acid, 24—60 hours.	Dec. 3.	23	"	"	" " "
11—14 "	Nov. 30.	Ear bitten off.	None used.	Dec. 5.	9 ²	No.	"	Mildest treatment given.
12—84 "	Dec. 2.	Hand.	None used.	Dec. 6.	15 ³	Yes.	"	"
13—28 "	Dec. 10.	3 abrasions right hand.	In ½ hr., sulphuric acid, nitric acid, thoroughly.	Dec. 16.	20	"	"	Patient a veterinarian.
14—14 "	1899. Feb. 4.	Severe bite on chest.	Nitrate of silver in 15 minutes.	Feb. 6.	19	No. ⁴	"	No tests made.
15—35 "	Feb. 4.	3 bites on hand.	Nitrate of silver in 10 minutes.	Feb. 6.	21	No. ⁴	"	Same dog as in Case 14.

¹ Patient discontinued visits.

² Treatment discontinued at end of two and one-half weeks as dog was proved not to have died from rabies.

³ Patient irregular in attendance.

⁴ Dog not obtained for inoculation experiments.

in doubt as to the result of their injuries, on account of a desire on the part of the president of the society to save some pain to three or four guinea-pigs, and his own unwillingness to believe facts which scientific men all over the world uphold with one voice. The dog was autopsied six days after it had bitten the three people and three days after its death. In its heart were found 60 to 70 round worms, 7 to 10 inches long, and the report of those who made the autopsy was that they found no evidence whatever of rabies, and that in their opinion, the dog did not die of rabies, but of the worms in the heart, which was sufficient to account for its death. The gentlemen who made the

The president of the Society before mentioned, in his letter to the public, besides printing the above-mentioned certificates which give no account of an inoculation-test with other animals, closes his letter by saying that to his mind this examination of the dog is conclusive that it did not have rabies, and if it were not for a few persons interested in the manufacture of "auto-rabic serum" (whatever that may be) and a sensational press, we would hear the cry of "mad dog" very seldom. He also says that several cases of rabies in dogs have been reported as occurring in Staten Island, but that after a careful investigation he has found the reports not to be true. As I had informed of these cases with the results

of the inoculations made by me, and as some of these dogs sent to us from Staten Island did have rabies, as clearly demonstrated by the only reliable test, the records of which I shall give later, no more need be said on the subject.

I have gone into this case at length because it only shows what obstacles have to be overcome in the work, and how difficult it is to clear the atmosphere of prejudice and unscientific arguments. I am not attempting to cry "mad dog" in all cases or anything of the kind, but I do believe in making as careful an investigation as we possibly can for the good of people in general, and when we have found in a certain locality several cases of rabies in animals I believe it is still more important to sift all matters to the bottom, and use all the means science has given us to get an unprejudiced result.

I will now proceed with the local and general treatment of persons bitten by animals. During the past year there have come to the laboratory of the Board of Health thirty-four persons for treatment. A year ago the department opened a place for the treatment of such cases of which I have been in charge since October 1, 1898. Before that time Dr. R. J. Wilson and I had charge together. In nineteen of the cases no Pasteur preventive treatment had been given for one or more of the following reasons: (a) The animal was evidently not mad, it being well at the time of the patient's application. (b) From the history of the dog it was apparent that rabies was not the cause of death. (c) An autopsy of the dog combined with a history of its illness made preventive treatment unnecessary. (d) Wounds so slight—skin hardly cut. (e) Slight wound through clothing.

In all cases in which cauterization was necessary and had not been properly performed it was done at the laboratory. Latterly I have used pure nitric acid; it makes a deep wound, but it has been demonstrated in a large number of guinea-pigs to be very effectual. I found that nitric acid used at the end of twenty-four hours saved ninety-one per cent. of the animals treated. This percentage was much the largest one obtained. From these experiments and other observations I believe rabies to be a disease of the nervous system, that infection takes place through lacerated nerves, that the virus remains localized for about twenty-four hours, and that a thorough cauterization with nitric acid would be effectual in about every case. It should be done with the patient under an anesthetic, as it is painful and in this way can be done more thoroughly. It is, of course, best to use the cautery as early as possible. The virus of rabies, as has been demonstrated by Pasteur and others, is not conveyed into the system by the blood.

I am aware that it is contrary to the present teaching to believe that late cauterization is effectual, and this fact accounts for the inefficient way many practitioners cauterize animal bites, usually with an inferior caustic like silver nitrate, which my experiments demonstrated to be of much less value than nitric acid or the actual cautery. I am not in favor of thoroughly cauterizing all bites with nitric acid, far from it; it all depends upon the circumstances attending each case. The remaining fifteen patients applying at the laboratory have been given the Pasteur preventive treatment, two of whom have just finished their course.

TABLE II.—POSITIVE TESTS MADE FOR RABIES, JANUARY 8, 1897, TO DECEMBER 13, 1898.

No. of Case.	Date of Inoculation.	First Symptoms of Rabies.	Length of Incubation Period. ¹
Dog, 1.	Jan. 8, 1897.	Rabbit, Jan. 21.	13 days.
Dog, 2.	Jan. 27, "	Rabbit, Feb. 8.	12 "
Cat, 3.	Jan. 16, "	Rabbit, Feb. 2.	17 "
Dog, 4.	Oct. 1, "	Rabbit.	8 "
Man, 5.	Feb. 2, 1898.	G. pig.	7 "
		Rabbit.	16 "
Dog, 6.	Feb. 10, "	G. pig.	7 "
		Rabbit.	14 "
Dog, 7.	Mch. 17, "	G. pig.	11 "
Dog, 8.	Apr. 25, "	Rabbit, May 14.	19 "
Dog, 9.	Apr. 30, "	Not recorded.	
Dog, 10.	June 22, "	Rabbit, July 1.	19 "
Dog, 11.	Dec. 9, "	Rabbit, Dec. 29.	20 "
Dog, 12.	Dec. 13, "	Rabbit, Dec. 31.	18 "
Dog, 13.	Dec. 2, "	G. pig, Dec. 15.	13 "
		Rabbit, Dec. 17.	15 "
Dog, 14.	Dec. 6, "	G. pig.	8 "

¹ Average for G. pigs, 9 days. Average for rabbits, 15½ days.

All the patients with the exception of the first are in good health to-day. The first and second patients (Table I.) were bitten by the same dog (Table II., dog 6) and were treated at the Health-Department laboratory. One or two other people were bitten by this dog which we found to have been rabid, and they were treated at another place. The other patients and patient No. 2 were all bitten comparatively slightly.

CASE I.—The patient, a woman aged fifty-one years, from Staten Island, was bitten February 7, 1898. The bites were of a very serious nature affecting both hands and arms, and in all numbering twenty-eight. The wounds were deep, the tissues having been severely lacerated. Judging* from the pain the patient suffered there could be no question but that large nerves had been injured. No cauterization followed these lacerations, but within a short time a mild solution of carbolic was employed. The wounds bled freely. The same dog bit the people mentioned above and also a dog owned by this patient. This last dog is No. 7 in Table II. It was bitten on February 7th, and on March 17th developed rabies, was autopsied at the laboratory and inoculation-tests made with rabbits and guinea-pigs, the first guinea-pig showing indications of rabies at the end of eleven days from the time of inoculation.

The patient did not believe in rabies and thought it foolish to take any treatment, but finally on March 5th, two days short of four weeks from the time of infection, she presented herself for treatment. Most of the wounds had healed but she still wore bandages and suffered considerably. The prognosis given to her family physician and her friends by Dr. Wilson and myself was very grave, for it seemed a most perfect case for an infection through the unquestionably injured nerves. The fact of there having been no cauterization and so long a delay before preventive treatment was instituted made the case to our minds almost hopeless.

Treatment was begun on March 5th and finished on the 25th. Toward the last few days of treatment the patient began to complain of intense pain in the right arm and hand over the seat of the lacerations. The pain became so severe that sleep was interfered with and anodynes were given. On the day the patient was to have received her last treatment she was taken ill, forty-seven days after having been bitten. Her family physician did not believe in hydrophobia, so that at the beginning a diagnosis of probable grip was made. The signs and symptoms as they developed were as follow: Increased pain in right hand, arm, and shoulder, and during the night of March 25th she had frequent attacks of vomiting; when seen by her family physician on the following day, pain in arm and shoulder was less but she felt very ill; she was lying in bed and complained much of weakness and very painful vomiting. The right arm was of a rather dusky color, the wounds dark red and painful when touched. At this time there was no paresis of any kind; her grip was perhaps slightly weaker, but not noticeably so, her throat was reddened, and she had a slight coryza. A spoon was put on her tongue and no difficulty in swallowing was noticed at this time. Her pulse was rapid, 116, and its rhythm irregular; temperature 100° to 101° F. On the next day, March 26th, when seen in the morning she was very nervous, had slept but little, and now complained of inability to swallow. She had taken no form of nourishment since 4 P.M. of the day before as she said it brought on the spasms. The physician attempted to look down her throat, but the mere appearance of the spoon precipitated a spasm of the diaphragm. She jumped up and begged to be patted on the back and said she could not breathe. After being quieted a good view of her throat was obtained without the aid of a spoon. The tongue was protruded naturally. Her right arm hung down by her side, tired, she said, and she could not raise it without the help of the left hand. When supported she could lift it but the grip was feeble. During the day she had many of these attacks, jumping up and leaning for support on one of the attendants, with a slight rotation of the body to the right and backward, at the same time suffering fearful agony. She became steadily weaker during the day, the spasms became more frequent, and from less apparent cause. There was wrist-drop, and if the right arm were suddenly unsupported a spasm would follow. The spasms grew more severe,

involving the whole body, and when seen by Dr. Wilson and myself on the afternoon of the 26th the scene was one never to be forgotten. There was well-marked paresis of the right arm which felt cold and was much congested. The spinal nerves became involved so that at times she became rigid, only touching her head and heels to the floor. She retained consciousness all through her illness. The suffering and feeling of apprehension was awful to behold. During the night of the 26th she became gradually weaker, some increased salivation was noticed, and she died of exhaustion on the morning of the 27th at 5 o'clock. At no time did she bark or make any attempt to bite, but was constantly crying out for relief in some form from her terrible distress. This is the only case of hydrophobia I have ever seen.

No autopsy was made, but we have enough evidence to prove it to have been a true case of hydrophobia. To forestall any possible inquiries from those who may say that the patient became infected by the treatment, I will say that:

First, we proved the dog rabid which bit this woman, also a dog was proven mad which was bitten by this dog on the same day, and which died ten days before this patient.

Second, we treated another patient at the same time and with the emulsion of cod that the patient who died received.

Third, the period between the time when any material given by us was at all virulent was only two weeks before the patient developed the disease.

Fourth, the fact that no cautery was used and that preventive treatment was not begun for nearly four weeks.

Fifth, the fact that the symptoms began in the sites of the wounds made by the dog in the right arm gradually causing paralysis of that member. If animals are inoculated in a nerve of an extremity the disease begins as a rule as paralysis in the extremity. This point has been proven by Pasteur and corroborated by others, among them myself.

Sixth, two rabbits were treated at the same time and both remained well.

Seventh, in several thousand cases treated by preventive method in the Pasteur Institute, Paris, no serious results have ever been produced by Pasteur treatment.

CASE II.—In Table II. material numbered five was taken from a man who died of rabies in Morristown, N. J., the patient of Dr. James Douglas. J. C., was bitten by his own dog on November 3, 1897. The dog was immediately killed so no evidence was obtained from that source, nor do we need any in the light of subsequent developments. The bite was on the thumb, and was cauterized with silver nitrate in three days. The man worried a little but not much more was thought about the case till January

26, 1898, about eleven weeks after the injury. The family physician was called in and found the patient sitting up in bed. He was very nervous and restless, and complained of great difficulty in breathing. Pulse, 120; temperature, 101.2° F. The patient called for a cup of coffee, but when it was brought to him he became very much excited and was trembling all over. He took the cup in his hand and after a great effort succeeded in getting a part of the coffee in his mouth the rest spilling on his face. He then had a severe paroxysm of the muscles of respiration and deglutition. His speech was slow and labored. He was apprehensive but felt encouraged when reminded that the dog could not have been mad. He was unable to sleep and was very thirsty. Water did not trouble him except when he tried to swallow it. He had no frothing at the mouth, but was troubled with a good deal of saliva, which while he lay on his side would run out of his mouth. The next morning all his symptoms were more severe; his pulse was 120 and temperature 101.6° F. He was unable to urinate. In the afternoon he was about the same. The next day he was seen at 4 A.M. He was sitting up in bed in great mental distress, and with an expression of intense anxiety. He begged to be saved. His paroxysms were very severe. He had not slept any during the night. He complained of great weakness, also of great thirst; thick mucus kept coming from his mouth. In the afternoon he was in a mild delirium. His mind, however, soon cleared and he was perfectly rational. This condition continued—occasionally delirious, then rational, gradually growing weaker, and he finally died from exhaustion on the 30th, after four days of fearful suffering. He never barked nor made any attempt to bite or injure anyone. His thirst was fearful, but he could not bear anything in his mouth on account of the spasms.

An autopsy was made by Dr. Thomas P. Prout, pathologist to the State Hospital, Morris Plains, N. J. The only gross lesion found of the central nervous system was a congestion, especially marked in the pons, medulla, and spinal cord, but by no means confined to these organs. The cortical cells of the brain under the microscope showed an extensive vacuolation, absence of chromatin in many instances, and the loss of the nucleus, together with an extremely granular condition of many cells and an irregularly outlined nucleus. Lungs showed some hypostatic congestion posteriorly with some bronchial congestion. Crepitation diminished in both, but especially on the right side. Spleen of normal size and appearance. Heart muscle very flabby; all valves normal. There was an ante-mortem clot in the right auricle, extending down into the right ventricle, and up through the pulmonary orifice. Microscopic examination of the kidneys showed some swelling of the epithelium in the convoluted tubules, and the cells in some portions were granular and necrotic. The vessels were somewhat engorged.

An examination of the blood was made, the patient not having taken food for about four hours

previously. The differential count gave evidence of a decided leucocytosis, and was as follows: Lymphocytes, 7.4 per cent.; large lymphocytes, 6.4 per cent.; multinuclear leucocytes, 86.2 per cent.; eosinophiles, none. In order to make a positive diagnosis a portion of the brain was sent to the New York City Bacteriological Laboratory, and resulted as is seen in Table II., No. 5, the first guinea-pig developing furious rabies on the seventh day, and the first rabbit developing paralytic rabies on the fourteenth day after inoculation. From these animals other animals were inoculated with positive results.

CASE III.—Mrs. E. of Malden, Mass., thirty years old, on November 13, 1898, was bitten on the face by a suspicious dog. About fifteen stitches were taken in the wound, which had previously been washed well with mercuric-bichlorid solution 1 to 4000. She died December 27th. Four or five days before her death she became very nervous, her face was flushed, and she complained of difficulty in swallowing on account of spasms, but she was able to take a little medicine. These symptoms became aggravated, the pulse gradually grew weaker, and she died at the end of four or five days. She was seen by Dr. Harlow and Dr. Oddin of Malden and a nervous specialist from Boston, who diagnosed the case as one of hydrophobia. Dr. R. H. Fitz of Boston was also called in consultation, and he confirmed this diagnosis. No autopsy. The dog which bit this woman was known to have bitten several dogs, one of them, a bull-terrier, being badly bitten on the head, a large lacerated wound; the dog at the end of eight days developed typical furious rabies,—spasms, inability to swallow, and increased salivation, and died in five days.

The veterinarian, Dr. William M. Simpson of Malden, who had this dog in charge, and who kindly sent me the history of Mrs. E., was afraid he had been inoculated by the dog through a wound on his hand, and came to New York for treatment. He is now in perfect health. The fact that this last dog developed rabies eight days from the time of the severe bite makes the inoculation period shorter than is usually the case. The case was too typical, however, to be mistaken, and in my opinion completely confirms the diagnosis made in the case of Mrs. E.

CASE IV.—Dr. Edward N. Sparks of Prince's Bay, Staten Island, sent me the following history: Mr. T. S., aged sixty years, of Staten Island, was bitten December 23, 1898, by his dog on the right cheek, which was badly lacerated, making a wound two and one-half inches long. The wound was washed out with weak carbolic-acid solution, and Dr. W. M. Eagan was then called who cauterized the wound with nitric acid. The wound healed to some extent, so that before death there was only a deep red cicatrix. No examination was made of the dog, which was at once killed. The patient, a carpenter, went about his work and felt no ill effect

until January 27, 1899, when he began to complain of pains all over the body and a smarting sensation in the wound in his face; this was just five weeks after the infection. The next day the patient was much depressed, would start up at the least noise, and showed marked morbid aversion to all kinds of liquids. He could swallow, however, and took a little solid food and some milk. The next day, January 29th, the patient was seen at 9 P.M. He was found lying on a sofa, perfectly rational, but unable to keep still in one position. Some jelly was given to him, which he swallowed with great difficulty. The edges of the wound were of a deep, ugly, red, but he said there was no pain in it. His pulse was 86, strong but slightly intermittent, tongue and throat very dry, and covered with white viscid mucus. He was not delirious, and was able to talk, although his articulation was thick, and it evidently gave him much pain. The next day, at 8 A.M., the 30th, the patient was about the same, but pulse was weaker, 110, and slightly irregular. At 2.30 he died in a paroxysm, three days after the first symptoms. Unfortunately, there was no autopsy.

These four cases resemble each other in many respects. In the first three cases there is proof enough to convince most of us that the patients died from the bites of dogs, and the fourth resembles the first three cases in all essential points, and undoubtedly it was the same disease in all four people.

To compare them: First, all bitten by a dog, in three of the cases very severely; second, time between infection and first symptoms was five to eleven weeks; third, time between first symptoms and death three to five days; fourth, all the patients had distinct spasms, increased by irritation of any kind; fifth, difficulty in swallowing most prominent symptom; sixth, in three cases increased flow of saliva; in fourth case this point was not noted in history sent to me; seventh, increased rate of pulse, which gradually became weaker; eighth, mind clear most of the time; ninth, none of the patients showed any tendency to bark or bite, but fully realized their terrible condition.

Whether we call this disease hydrophobia or give it some other name makes little difference. We have a distinct disease with fairly definite symptoms. That the disease was inoculated by means of bites of animals suffering from the same disease is evident. These cases all occurred during the past year.

The Pasteur preventive treatment was given to 1308 people at the Pasteur Institute of Paris from January 1, 1896, to January 1, 1897. These people had all been bitten by suspicious animals. A mortality-rate following this treatment of 3/10 of one per cent. was shown of patients dying of rabies. In looking over statistics of rabies in Germany, Aus-

tria, and England, a death-rate of fifteen per cent. of undoubted cases developing rabies, after bites where no preventive treatment was given, would be a conservative estimate.

In treating a patient bitten by an animal, I should proceed about as follows: Obtain the history of the animal as far as possible. If the locality where the patient was bitten had been the seat of other cases recently, and the wound was in an exposed part of the body, hand or head, I should cauterize thoroughly within twenty-four hours, using an anesthetic and nitric acid. If the wounds were severe give Pasteur preventive treatment, if the bite was superficial or through the clothes, and the cauterization was made thoroughly within twenty-four hours, I should probably do no more; certainly not if there had been no cases of rabies in the neighborhood.

The Pasteur preventive treatment can never do harm and if the patient desires it, I should always advise its use. It is given in the following way: The spinal cord of a rabbit dead from laboratory rabies is hung in a sterile jar with two vents, one in the lower and the other in the upper part, both filled with absorbent cotton. In the bottom of the jar is placed a few sticks of caustic potash to aid the drying process. The jar is kept in a dark room at a temperature of 68°-72° F. A portion of the cord thus prepared is emulsified by the gradual addition of sterile water and by means of a glass rod. A cord dried fourteen days is the one used for the first injection and then each day a fresher cord is employed until one dried only three days is finally used. The dose of the emulsion for the older cords is 3 c.c. for adults, and then finally, 1½ c.c. for the fresher ones. The injections should be given under aseptic precautions either into the subcutaneous tissue of the abdominal wall or the buttock, care being taken not to penetrate the muscular tissue. No particular reaction, either local or general, should follow the injections. Before the cord is emulsified at least two tests should be made to prove its freedom from any chance contamination. The usual course of treatment lasts fifteen days in which time twenty to twenty-five injections are given. If the subject comes late or if the injury is very severe and near a large nerve, the intensive form of treatment may be employed. In this way more injections are given daily, thus rapidly approaching the time to use virulent cords. Children bear nearly as large doses of the cords as adults.

The disposition of animals which have bitten people I believe should be as follows: Never killed, but captured, and placed in a kennel under lock and key for a week. If at the end of that time they are well, there is naturally no danger for the person

bitten. If the animal dies, an autopsy should be made, all the organs examined, and a portion of the brain and spinal cord emulsified and inoculated into guinea-pigs and rabbits. If a disease which could cause death should be found in other organs it is of importance, but we should also make the inoculation-tests to demonstrate beyond a doubt that rabies was not also present in the same case. We would in this way be able to say truthfully that according to the result of the autopsy and tests, the animal did or did not have rabies.

The shooting of the offending animal is a common mistake but is a most serious one and should be protested against by all intelligent people until we hear no more of a barbarous and ignorant mistake which has been made and is still made so frequently. In this way, many harmless animals are killed which are perfectly free from rabies, and persons who have been bitten are left in terrible doubt as to the condition of the animal.

That rabies is a relatively frequent disease in animals, I have no doubt. Dr. R. S. Huidekoper, at a recent meeting of the Harvard Medical Society where I read a paper on hydrophobia, soon to be published in *The Journal of Experimental Medicine*, gave some very interesting figures of the prevalence of hydrophobia in animals. He believes, as do many others, that rabies is more frequently seen in its paralytic or dumb form than in the furious excited type in which animals are more inclined to bite. This paralytic form is often mistaken for other diseases, and unless inoculation-tests are made, the case is recorded as something else. Dr. Huidekoper has seen about two-hundred cases of hydrophobia in the different domestic animals, both in Europe and in this country, many of the cases proven by inoculation-tests. The longest incubation period he has observed was six months in a hound in Belgium, proven by inoculation-tests. A committee not long ago was formed, among them Dr. Huidekoper, to find out if possible how much rabies prevailed in this country, and in what particular places. To do this, veterinarians all over the country were written to, and from their answers a chart of the country was made, giving the different localities with the number of cases of rabid animals seen there for a certain number of years. Perhaps a whole State would have hardly a case and again in a certain part of a State there would be a great many cases while none in the rest of its area. In the West many cases occurred in the domestic skunk and it has been so prevalent and so dangerous that in one of the States the legislature has taken up the matter for consideration with a view to taking radical measures.

Dogs are the most common animals in this part of

the country to suffer from rabies. Fortunately people are not particularly susceptible so that they are seldom infected though frequently bitten. We will have rabies so long as dogs are allowed to run around without an owner or without supervision of some kind. People themselves cannot be trusted to destroy dogs for they do it cruelly. It seems to me the way to eradicate rabies from civilized centers (I am referring to rabies in dogs) would be to have intelligent agents appointed to do nothing else but look out and see that all dogs are licensed, to put a high license on dogs, higher on female than on male dogs; for these men to see that every dog has an owner; and any dog not looked after closely should be taken and disposed of humanely. In case of a suspected outbreak of rabies, to have an expert on the subject detailed to study the cases, to have all dogs in that place muzzled or taken on a leash or both for a period of six months from the time of the outbreak, and all dogs found loose, destroyed during the same period. To do this, there should be employed a number of well-paid, intelligent men. In this way I believe we could largely control this disease, and we would indeed then hear little of the cry of mad dog. A law in Germany making muzzling of dogs compulsory has been very effectual in controlling rabies.

To demonstrate further the point that rabies is not such a very uncommon disease in animals, I will give a few statistics on the subject. My friend, Dr. Langdon Frothingham of Boston, has been examining animals sent to him as pathologist to the Massachusetts Cattle Commission. He has examined thirty animals supposed to have died from rabies in and around Boston during the past eighteen months. He has used the inoculation-tests with rabbits, and among these thirty animals twenty have been proven to have died of rabies. Among these animals was a horse and a cow. The average time between inoculation and beginning rabies in the test rabbits was sixteen days, nearly the same average that we obtained in the rabbits in Table II. In 14 cases out of 21 examined by us, guinea-pigs gave an average number of 9 days between inoculation and beginning rabies, as given in Table II. I began to use guinea-pigs about a year ago, and the average time in developing rabies shows a gain of about a week in the case of the guinea-pig over the rabbit. Guinea-pigs are also much less likely to die of septicemia, points of considerable importance when a person is perhaps waiting for a diagnosis of the suspected animal before beginning preventive treatment.

Dr. J. H. McNeill of the Veterinarian Hospital, University of Pennsylvania, who was a patient at the laboratory in New York, and received the

Pasteur preventive treatment from me last December, writes that from June 1, 1898, to January 1, 1899, a period of eight months, 360 cases of all diseases in animals were treated in the hospital. Twelve of them were diagnosed as rabies, and six of them were true cases, as proven with rabbits by test-inoculations.

Dr. W. M. Simpson, a veterinarian of Malden, Mass., who came on here for treatment, and who gave me the history of Case IV. of hydrophobia in Mrs. E., which I have already described, has seen twenty-two cases of rabies in animals and the paralytic form most frequently. In nearly all cases the diagnosis has been confirmed by inoculation-tests. The symptoms presented as a rule are abundant flow of saliva, more or less vomiting and uneasiness which gives place to the characteristic condition of paralyzed jaw and throat. The dogs will often be able to lap water for a few minutes, although unable to drink, but will keep returning and trying to again and again. The dogs with the paralytic form will not, as a rule, bite, but will act as if there were a bone in the throat. The peculiar high-pitched howl is most characteristic.

Eight cases of suspected rabies in dogs have been sent to the laboratory from Staten Island during the past year, and in six of the animals the inoculation-tests were positive, showing that there has been a certain amount of reason for the recent mad-dog scare.

Dr. Harold C. Ernst, Professor of Bacteriology at Harvard, not being able to accept an invitation to attend this meeting, says that, in his opinion, rabies is not very frequent in man, that the number of cases of the disease seems to vary very much in different years, that the cauterization of bites does no good unless done practically instantaneously, but that sucking the wound and ligation when practicable should be practised. He says further that he knows of no way by which the diagnosis can with certainty be made except by the inoculation-test.

Dr. William H. Welch of Johns Hopkins Hospital, Baltimore, says in a letter to me of recent date: "I believe that rabies is more prevalent in this country than is generally supposed. It cannot be called uncommon in animals in this State, and several authentic instances have occurred in human beings. Before the establishment of the Pasteur Institute in connection with the College of Physicians and Surgeons of Baltimore I noted the greater number of suspected rabid dogs which had bitten persons in this vicinity, and during about five years twelve of these dogs were proven experimentally to be rabid. I think that most cases diagnosed as rabies by competent physicians are in fact rabies. We

have means of recognizing the existence of rabies as precise and conclusive as recognizing typhoid fever; that is, the inoculation of rabbits in series. As regards rabies in animals in this State I would refer you to a paper by Dr. Clement, our State Veterinarian in the *Proceedings of the Maryland State Veterinary Association*, p. 177, for 1897. In the same proceedings for 1898, p. 28, are further statements about the prevalence of rabies elsewhere. For Washington see *Twelfth and Thirteenth Annual Reports of the Bureau of Animal Industry* (1895-96), p. 267. We greatly need accurate information as to the prevalence and distribution of rabies in this country."

Dr. Leonard Pearson, Dean of the Veterinary School of the University of Pennsylvania, writes to me as follows on the subject of rabies: "This disease is one that I have had considerable experience with during the last three years. There have been several extensive outbreaks in Pennsylvania. During the year 1898 I obtained authentic reports of the death from rabies in Philadelphia of 3 men, 1 boy, 55 dogs, 3 horses, 6 cattle, 4 pigs, 1 goat, and 10 sheep. Many other alleged cases have been reported but not proven.

"This list does not include the animals that were killed on account of fear that they might develop rabies. It includes only those actually developing the disease. In many instances the diagnosis was confirmed by the inoculation of rabbits. In several instances I have been able to trace an outbreak through several generations of disease. It is unfortunate that this disease is so poorly understood by the laity and by many physicians.

"The conflicting views that prevail in regard to it make administrative procedures extremely difficult.

"I hope that the Section on Medicine of the Academy of Medicine will succeed in placing this important subject in such a light that many false views will be obliterated."

I have heard from many prominent medical men recently and I find none who has doubts as to the existence of rabies in man and animals.

The representative men abroad and in this country, those who do the principal thinking and teaching, recognize the importance of the subject. Owing to rabies being a rare disease in man there is still a great deal to be learned about its various manifestations and methods to be pursued to eradicate it from civilized centers.

Smallpox Epidemic in Texas.—The smallpox epidemic in Texas is very serious. There are over 200 cases in Laredo, and the epidemic has spread to nearly all the towns in Central Texas.

THE CAUTERIZATION OF WOUNDS INFECTED WITH THE VIRUS OF RABIES, AFTER AN INTERVAL OF TWENTY-FOUR HOURS.¹

By FOLLEN CABOT, M.D.,
OF NEW YORK;

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DURING the past six months I have been conducting a series of experiments with guinea-pigs to determine the effect of different cauteries on wounds after an interval of twenty-four hours from the time of infection by rabies. It has been commonly believed that unless a cautery is used within an hour after infection by a suspected animal it would be useless. This belief is held by physicians in general, and also, apparently, so far as the literature seen by me indicates, by those familiar with rabies. For this reason physicians when applying a cautery later than an hour after infection do so largely as a matter of form, for its moral effect on the patient, and so the application is not thorough, and in consequence not effectual. There is no evidence to show that this is the case at all; no systematic investigations have been published to prove the point one way or the other.

We know that the virus of rabies is not carried into the system by the blood, but through the nervous system. The objects of the series of experiments undertaken by me, the results of which are given in the tables below, were: First, to demonstrate if it be possible that the disease, rabies, after an interval of twenty-four hours has elapsed between the infection and cauterization, can be prevented from subsequently developing; and, second, to demonstrate the comparative values of some of the different cauteries and simple cleansing of the wound.

In the experiments I have used 287 guinea-pigs. The first 79 were employed to demonstrate at what point inoculations of virus would be most fatal where a cautery could be safely used, whether near a large nerve or not, and in what form and dose to employ the rabic virus. After much careful study of the subject with these seventy-nine animals, the following method was employed in all the experiments tabulated below: A portion of medulla taken from a rabbit dead from laboratory rabies was beaten into an emulsion composed of one part of medulla to five parts of sterile water. Of this emulsion one cubic centimeter was injected with a hypodermic needle into the outer and upper part of the thigh of a guinea-pig. The hair was closely cut, and the point of the needle introduced one-fourth of an inch, at

right angles, into the region of the sciatic nerve. This injected virus was left undisturbed for twenty-four hours, at the end of which time an incision half an inch long was made over the seat of puncture, exposing the nerve. The tissue in the wound surrounding the point of puncture was carefully swabbed out and the cautery applied, the animal meantime being anesthetized with chloroform.

The first cautery employed was fuming nitric acid, and the results are given in Table No. 1.

TABLE NO. 1.—NITRIC ACID.

No. of Series.	No. of Animals Injected.	No. of Animals Cauterized.	Per Cent. Lived.	Not Cauterized.	Per Cent. Lived.
1	8	4	100	4	00
2	13	8	75	5	20
3	6	3	100	3	00
4	12	6	83	6	17
5	21	13	100	8	38
Totals.	60	34	91	26	15

This demonstrates that when nitric acid was used on infected wounds after an interval of twenty-four hours, ninety-one per cent. of the animals did not develop rabies.

TABLE NO. 2.—ACTUAL CAUTERY.

No. of Series.	No. of Animals Injected.	No. of Animals Cauterized.	Per cent. Lived.	Not Cauterized.	Per cent. Lived.
1					
2	11	7	85	4	25
3	20	15	60	5	20
4	14	11	72	3	00
5	14	11	63	3	00
Totals.	59	44	70	15	11

In Table No. 2, in which is shown the results when the actual cautery was employed after the same interval between infection and cauterization, as in Table No. 1, seventy per cent. of the cauterized animals lived, twenty-one per cent. less than when nitric acid was used. Undoubtedly the heat killed all the virus with which it came in contact, but it is very much more difficult to reach all parts

TABLE NO. 3.—NITRATE OF SILVER. (LUNAR CAUSTIC.)

Series of Animals.	No. of Animals Injected.	No. of Animals Cauterized.	Per Cent. Lived.	Not Cauterized.	Per Cent. Lived.
1	18	15	46	3	00
2	12	9	88	3	00
3	15	13	31	2	50
Totals.	45	37	55	8	16

¹ Read before the New York Pathological Society, December 14, 1898.

of a wound with the cautery-needle than with a fluid like nitric acid, which naturally seeks a level, and thus penetrates all portions of the wound.

According to Table No. 3 it will be seen that only a little more than one-half of the cauterized animals did not develop rabies. In these experiments nitrate of silver was demonstrated to be inferior to nitric acid or the actual cautery.

In the next series of experiments, the results of which are presented in Table No. 4, no cautery whatever was employed, but at the end of twenty-four hours after injection in the usual way the point of infection was cut open, and the wound swabbed out with dry absorbent cotton and then left open.

TABLE NO. 4.—WOUNDS SIMPLY SWABBED OUT.

No. of Series.	No. of Animals Injected.	Number Swabbed Out.	Per Cent. Lived.	Not Swabbed Out.	Per Cent. Lived.
1	23	15	33	8	12
2	26	11	29	10	20
Totals.	49	26	31	18	16

The results shown by this table (No. 4) seem to demonstrate that a certain amount of good may be derived from simply opening and swabbing out infected wounds.

In the foregoing tables all the animals that died had typical rabies. There was a question of this in five animals, and these have not been included in my statistics.

It seems to me that the following observations on the result of my experimental investigations in hydrophobia are of sufficient importance to be recorded: That guinea-pigs inoculated subdurally with street rabies develop the disease as a rule in its furious form in from seven to ten days, and are much less likely to die from septicemia, while rabbits treated in the same way do not as a rule develop the disease until fifteen to eighteen days have elapsed, and then in the paralytic form, and are also very susceptible to septicemia, thus proving the superiority of the guinea-pig for the purpose of making an early diagnosis in the case of a suspected animal. This is a point of considerable importance when it is remembered that most of the subjects one sees have been bitten by animals when the diagnosis of rabies is questionable, an exact diagnosis being of the utmost importance on account of the subsequent treatment.

The following case is an example, and several such have come under my personal observation: A person was bitten by a suspicious animal; the animal was killed and inoculations were made from the

medulla into rabbits and guinea-pigs; at the end of ten days the animals remained well, so the Pasteur treatment, which had been employed in its mildest form, was not increased, but was continued a few days longer as a precautionary measure, and then, as the animals still remained well, discontinued altogether.

It will be well, however, to bear in mind the individual immunity or delayed development of rabies in a small percentage of guinea-pigs, and to inoculate a sufficient number of animals to allow for such an individual resistance to the disease. In the light of the history of a recent case, in order to assure an early diagnosis, I shall in future inoculate from fifteen to twenty guinea-pigs from every suspected subject.

An animal supposed to be mad should never be killed, but should be confined and carefully watched during at least two weeks; if it dies before that time a definite knowledge of the course of its disease will be gained, and the medulla may be used for inoculations, while if it remain well for two weeks fear of hydrophobia need no longer be entertained, with the consequent elimination of the element of danger to the patient and his great mental relief.

The foregoing observations have been of practical use during the past ten months, during which time the Health Department, having adopted the Pasteur preventive treatment for hydrophobia, has treated several people and has examined many animals which were sent to the laboratory for autopsy and test-inoculations to determine whether or not the case was one of rabies.

The conclusions I have drawn from my investigations are: (1) That ninety-one per cent. of guinea-pigs can be prevented from developing rabies if the wounds be cauterized with chemically pure nitric acid at the end of twenty-four hours from the time of infection, probably a larger percentage if the cautery be used earlier. (2) That fuming nitric acid is more effectual than the actual cautery or pure nitrate of silver. (3) That some degree of benefit is derived from thoroughly opening and swabbing out an infected wound within twenty-four hours from the time of infection when no cautery is used. (4) That in cases in which the Pasteur treatment cannot be applied great benefit may be derived from the correct use of the best cautery and proper treatment of the wound. Even in cases in which the Pasteur treatment can be given, an early cauterization will be of great assistance as a routine practice, and should be very valuable, as the Pasteur treatment is frequently delayed several days for obvious reasons. (5) That in the case of small wounds all the treat-

ment probably indicated will be thorough cauterization with nitric acid within twenty-four hours from the time of infection. (6) That from twelve to sixteen per cent. of the guinea-pigs used as controls do not die after inoculation, thus demonstrating that a small percentage of guinea-pigs have a natural immunity from rabies.

THE RELATION OF DIAGNOSIS AND PROGNOSIS IN HIGH GRADES OF GASTRIC STAGNATION.

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In cases of marked dilatation, and even in milder degrees which show severe symptoms, or in which advancing age or some similar circumstance arouses grave suspicions as to the nature of the disease, mechanical, chemical, and vital elements must all be considered in making a prognosis. Three questions present themselves: (1) To what degree can the size of the stomach be diminished and its motor-function be restored? (2) Will the stomach regain its digestive power? (3) Is the life of the patient threatened? At first thought it would seem that the first question would not occur to the patient, but, in a surprisingly large number of instances the patient is aware of the degree of dilatation, can map out his own stomach quite accurately, and may even be an adept in the use of the tube.

Mr. W., aged thirty-five years, in comfortable circumstances, gave a history of stagnation extending back thirteen years, without obvious cause, though ulcer at the pylorus was suspected. For four years he had used the stomach-tube, mainly without medical supervision. His stomach, nine hours after a meal, and further emptied by repeated vomiting, extended fully an inch to the right of the median line and as far below the umbilical equator. It was as large as a full stomach should be and an inch and a half below the normal position. The diagnosis between sagging due to dilatation and sagging due to ptosis was somewhat doubtful. For some reason not noted the diaphane was not used to decide this point though the writer would confess that he cannot depend absolutely on this method of discrimination. In fact true dilatation is very likely to accompany displacement of the stomach while apparent ptosis is always noted in dilatation unless advanced pregnancy or some peculiar condition keeps the stomach at a high level. Granting that the trouble was genuine dilatation this case represented about the maximum degree in which cure can be expected by medical treatment. The first question in prognosis was, therefore, doubly in doubt; the duration of the trouble and the fact that the patient was still able to attend to his business made the third question as to maintenance of life favorable. The second question, as to the probability of cure of dyspeptic symptoms

in case the stomach could be restored to normal size, was answered only by the progress of the case, and then not positively. Hydrochloric acid was found present several times about four hours after eating, but was absent an hour after a test-meal. The filtered gastric juice on adding hydrochloric acid digested coagulated egg-albumen fairly well. Sometimes it was necessary to supplement the secretion of hydrochloric acid, sometimes not. On the whole it was decided, especially as after a month the stomach had contracted and risen very nearly to its normal location, that thorough treatment would bring about a cure unless there remained so great a mechanical obstacle at the pylorus that the dilatation would tend to recur as soon as treatment should be stopped. The patient proved to be one of the kind that is not lacking in appreciation but that does not persist in treatment. He was materially improved and even as late as five months after the beginning of treatment and more than three months after its cessation his stomach was in fair position though showing some relapse. Naturally the dyspeptic symptoms had not entirely disappeared.

This case is reported rather fully because it stands as a type of a fairly large number. Judging from other cases which have been under observation for a much longer period, if such a stomach can be reduced to its normal size, if cancer can be eliminated from the diagnosis, if there is not a cicatrix or other lesion at the pylorus which tends to reproduce the dilatation, if the ferments are present in the gastric juice, if there is no renal nor circulatory trouble to maintain a catarrh of the stomach, if the patient will continue treatment for six months and will abstain from positively harmful articles of food and drink, he can expect to be cured symptomatically—that is, functionally—as well as in regard to gastric area. In the present case, as in one of the milder cases elsewhere reported,¹ there was some indication of beginning sclerosis of the liver. In the case of another patient whose stomach was of about the same size and who has considered himself cured for two years hepatic contraction certainly exists and just as certainly will, sometime, reassert itself by a renewal of gastric symptoms. But in a surprising number of cases all of the conditions necessary to a cure will be fulfilled.

The prognosis as to the chemic restoration of the stomach must, nevertheless, be guarded. In cases of curable dilatation of marked degree the patient should understand at the beginning of treatment that a "dyspepsia" will persist for several months after the size of the stomach has been reduced to normal, if such a restoration be possible. If the muscular tone of the organ becomes normal so that it is empty at the proper time after a meal, if hydrochloric acid is present in normal amount and the filtered juice

¹ MEDICAL NEWS, April 9, 1898.

acts rapidly on coagulated egg-albumen, if gastric mucus—which is quite easily distinguished from esophageal—is not abundant, the prognosis is favorable. The microscopic examination of particles of mucous membrane found in the wash-water after lavage has been described by Ewald, Einhorn, Hemmeter, and others. These examinations are tedious and by no means as reliable as might be anticipated. Careful studies of the stomach have shown that the mucous membrane does not necessarily show the same conditions at different points. It is therefore a matter of accident whether a bit of exfoliated epithelium gives us a fair average or an exceptional picture of the state of the stomach. Einhorn's and Hemmeter's reports show also that there is only a very general correspondence between the chemic state of the glands and the microscopic findings. There is also a practical consideration which would naturally occur to any one *a priori* but which is verified by clinical experience, namely, that it is difficult to base a definite opinion as to diagnosis on a shred of tissue which is in nine cases out of ten, merely dead epithelium cast off from the mucous membrane. Hemmeter mentions an instructive case in which a student tore off a little piece of gastric mucosa, and Turck has devised an instrument for thus sampling the mucosa of dogs, but it is never justifiable to seek a fresh piece of tissue from the stomach of a patient. It is evident to any one who will look at the figures of cancer-nests and of normal alveoli as shown in text-books—Ewald's for instance—that slight degenerative changes after exfoliation will often obscure the differential diagnosis. In a case seen by the writer, in which several competent physicians had diagnosed cancer and in which a pyloric tumor was palpable, which was also marked by hematemesis, five examinations failed to reveal a typical cancer-nest, though many round epithelial cells were seen. In another case it was possible to state quite positively that cancer-nests were present though no one group of cells would justify an absolute statement, but the value of the microscopic examination was vitiated by the fact that other signs and symptoms made the diagnosis still more positive. However, in many cases of suspected cancer every possible diagnostic light is needed. Thus, in general, the writer would grant a microscopic examination of fragments of gastric mucosa ought to be made in every doubtful case, but rather with the idea of training the diagnostic faculties than because definite results are at present attainable. The main value of such study is in the distinction of cancer. Up to the present time this method has not enabled us to distinguish accurately between organic and functional diseases of the stomach so that the differentiation

between catarrh and glandular sluggishness remains a vague one.

The vital question in prognosis refers to the coincident development of some disease more malign in its tendencies than the dilatation or other degree of muscular change. Extrinsic diseases, as of the heart and kidney, which are very frequently the indirect cause of gastric catarrh and dilatation, need not be considered in detail. The three grave gastric diseases are anadenia,—which may be considered the culmination of catarrh—ulcer, and cancer. Anadenia is fatal only when deficient motor-power of the stomach or serious failure of the intestinal digestion occurs. As a general rule the intestine will maintain good nutrition so long as the stomach will push its contents along. It is not possible to make a positive diagnosis of anadenia during life unless through surgical opportunities for direct investigation, but the condition may be inferred with great probability if several examinations of the gastric contents show non-acidity (hydrochloric) and absence of pepsin. Addison's disease may manifest itself by a suppression of ferments simulating genuine glandular atrophy.

The diagnosis of frank gastric ulcer is easy. Latent ulcer, according to researches by Stoll and others in Germany, seems to be of an entirely different clinical nature, usually affecting the middle-aged and elderly, not prone to hemorrhages of any magnitude, and not diagnosable during life, unless with the gastroscope. A case showing by external examination almost the same gastric area as in the first case reported has been under observation since 1891 and the history shows that the dilatation was then of some years' standing. Repeated hemorrhages occurred. When a patient consults a physician regarding prognosis his inquiries are generally, in substance, Can I get well? and How long shall I live? In the case of ulcer we can no more answer these questions than similar questions by a man sitting on a keg of dynamite; we can only say that the condition is always dangerous but that the fatal accident may be averted.

The most important question regarding prognosis in gastroptosis and dilatation is only another wording of the question as to the presence or absence of malignant disease. The solution of the problem is easy and the prognosis correspondingly grave when cachexia, tumor, and hemorrhage, one or all, are marked. Sometimes the exfoliation of parts of a growth renders the diagnosis as indisputable as one made on the autopsy-table. But such a diagnosis and prognosis are hopelessly late. Realizing this, the profession has caught at every straw that might support an early diagnosis and has not stopped to consider that while cancer almost always leads to

serious depression of function the same degree of depression may exist temporarily without cancer. Diminution of urea, absence of hydrochloric acid, presence of marked lactic-acid fermentation have in turn been upheld as pathognomonic of cancer. All have likewise been disproved, though the German investigations referred to in several reports of the meetings of the Berlin Medical Society for 1895-6 regarding the fallibility of the lactic-acid test have only recently become known in this country. It is surprising that the presence or absence of pepsin, which is really more serviceable in the diagnosis between malignant and non-malignant gastric failure than any of the others, has not been suggested as a pathognomonic sign. But non-malignant anadenia shows a lack of ferments. However, from the patient's standpoint, a complete anadenia with concomitant intestinal failure is a malignant disease. Dilatation may continue for some time without enabling a positive diagnosis for or against malignant disease to be made. These cases also suggest the thought, Are they malignant from the beginning, or does the cancer develop as a result of the dilatation and inseparable chemical disturbance? Age is not a reliable factor in determining the diagnosis. The writer recently had under observation a patient, aged thirty-two years, on whom gastrostomy had been performed for malignant occlusion of the esophagus, and who presented strong evidences of cancer,¹ besides indubitable ones of dilatation of the stomach. Here the dilatation seems to have been the original disease and to have been due to habitual use of enormous quantities of beer, four gallons being said to have been a customary daily allowance.

On the other hand a pyloric tumor is not necessarily malignant. Rosenheim cites such a case in which the diagnosis was confirmed by a number of careful observers who noted the gradual growth of the tumor, afterward explained as due to progressive emaciation, and the usual cachexia and symptoms of cancer. On autopsy the growth was found to be entirely fibroid. Had it not been for the confirmed diagnosis of cancer, gastro-enterostomy would have been performed and recovery would probably have occurred. Einhorn has reported a number of similar cases but considers pylorotomy or pyloroplasty as the ideal treatment.

Deplorable as the fact is we must acknowledge that positive diagnosis of gastric cancer cannot be made in time for radical surgical operation in the present state of our knowledge. The diagnosis may sometimes be made with considerable probability, but usually the patient should be sufficiently in-

formed as to the probabilities and possibilities to take upon himself the responsibility of accepting or refusing a sufficiently early exploratory operation. The fact already referred to, that the major part of digestion is performed by the intestine, renders the prognosis of non-malignant gastric diseases of all kinds quite directly dependent upon the state of the motor function.

CLINICAL MEMORANDA.

AN INTERESTING CASE OF HYDROPHOBIA: RECOVERY.

By JOHN J. LIGGET, M.D.,
OF LADIESBURG, MD.

FEBRUARY 14, 1878, D. S., an American laborer, aged thirty-four years, weight 140 pounds, married, informed me by a messenger that he had pains in his stomach and side, and desired some purgative medicine. I sent him some compound cathartic pills with directions to take two at night and one in the morning. February 15th, at 10 A.M. I visited him and found that he had had two evacuations after taking the pills. He fainted soon after 8 A.M. He was lying in bed, had pains in the epigastrium and was indisposed to talk. His pulse was normal, but he had convulsive tremors in all his limbs. I suspected malingering, and left a placebo, directing that sinapisms be applied to the epigastrium and along the spine if the tremors continued. At 5 P.M. I received an urgent call to visit the patient who had had spasms since 4 P.M. I was unable to visit him that evening, but sent him chloral hydrate, 75 grains in solution, which was taken in 15-grain doses from 10 P.M. until 4 A.M. on Saturday. He had thirteen convulsions during this time.

February 16th at 8 A.M. I found him in a strong convulsion. Five able-bodied men were laboring to keep him in bed. Was very violent and endeavored to seize those around him with his teeth and hands. Profuse secretion of viscid saliva. Head cool, pupils sensitive to light during spasm, pulse slightly frequent and tense. Bled him to the amount of $\frac{3}{4}$ xxiv. Symptoms of syncope. In half an hour free alive and urinary discharges occurred. Spasms ceased for an hour, and then returned as strong as before. He drank a little water just before the spasm; there were convulsive movements of the glottis before, during, and after drinking. Consciousness perfect between the spasms. Could always give warning of an approaching attack. Suspecting an inflammatory condition of some of the nervous centers, I gave him at 10 A.M. half a grain each of morphin sulphate and antimony and potassium tartrate. This had but slight effect, and in two hours I repeated the powder. Applied sinapisms to ankles. At 9 P.M. the spasms had been less violent since noon. The patient had taken four powders since 10 A.M., as well as 3 ounces of rum. Tenderness over tenth dorsal vertebra; applied a small blister at 10.30 P.M. Had previously tried to inject morphin subcutaneously in back, but failed as the pricking of the needle produced a convulsion. A teaspoonful of water

¹ Cancer of the stomach involving the left lobe of the liver, besides an esophageal tumor, verified by autopsy.

in the mouth produced a spasm. Before a convulsion he would lie perfectly motionless, answering questions, eyes closed, and breathing laboriously. Then a lateral motion of the eyes beneath the lids would commence, and in a minute or two the eyelids would open to their widest extent, and the gaze be fixed on the ceiling. Suddenly he would spring as though acted upon by a powerful electric apparatus, get up on his hands and knees and be nearly out of bed before he could be seized. He would then be turned on his back, and held only by great effort. He would make desperate efforts to bite those about him, would forcibly eject saliva from his mouth. Apparently a series of galvanic shocks would start from the head and radiate along the spine and extremities. The breathing during a paroxysm was hurried and difficult. The jaws were perfectly mobile. An onion was held near his mouth and he instantly snapped at it with his teeth during one of the paroxysms. During a paroxysm the fingers and thumbs could be flexed or extended at will. A light brought to the bed would instantly produce an attack. I gave the fifth powder of morphin and antimony tartrate at 10 P.M. and at midnight gave him 1 grain of morphin and $\frac{1}{2}$ a grain of antimony and potassium tartrate. At this time I was told that the patient had been bitten a year or two before by a dog believed to be mad. The precise date was not recollected. Examined a well-marked cicatrix on leg, but could detect nothing abnormal. Patient said that the bitten leg had pained him several days before his illness. Perceiving no effect from the last powder I repeated it at 2 A.M., and left him an hour later. Prognosis very unfavorable.

February 17th, 9 A.M. Found patient in same condition. He had taken two more powders. Blister had been removed at 4 A.M. Had drawn well. At 11 A.M. consulted with Dr. Milton A. Lauver of Bruceville, Md. At 12 M. while the patient had a spasm, Dr. Lauver applied a small quantity of water to his neck and breast. He became furious. The laryngeal and respiratory muscles were powerfully affected. At 1 P.M. gave him 2 grains of morphin sulphate. At 4 P.M. he was given morphin sulphate 2 grains and antimony and potassium tartrate $\frac{1}{2}$ a grain. He had six terrific convulsions from 1 to 5 P.M. In our consultation Dr. Lauver and I coincided in the diagnosis of hydrophobia. From present indications the patient must inevitably succumb to the disease, and the line of treatment, if persevered in, would be extremely hazardous. In thirty hours he had taken $10\frac{1}{2}$ grains of morphin and 5 grains of antimony and potassium tartrate. Dr. Lauver and I returned to my office and examined the *American Journal of the Medical Sciences* for January, 1860. My father, Dr. John E. H. Ligget of Middleburg, Md., had reported a case, which he believed to be hydrophobia, in that journal. The patient was a female and had recovered. We believed that the only way to save the patient's life would be to follow my father's treatment.

February 17th, 6 P.M. Gave patient calomel 3i, in a spoon mixed with a little syrup. He took it with some effort. In half an hour he became quiet and fell asleep. Pulse 72, respirations 12. Aroused the patient at 8.30 P.M., when he asked for water. Gave him a gill, and

in eight minutes he had a moderately severe spasm which lasted twenty-five minutes. After spasm micturition occurred for the first time in thirty-six hours. At 9 P.M. gave him calomel grs.x. Rested quietly and became talkative. At 10 P.M. symptoms of catharsis. Gave tincture of opium 3ss, and left him for the night. February 18th, 10 A.M. Found patient better. Had taken calomel as follows: 20 grains at 12.30 A.M.; 3i at 4 A.M.; 20 grains at 6.30 A.M. Had four convulsions from 10.30 P.M. until 10 A.M. Pulse 80, respirations normal. Paroxysms had been mild and lasted from fifteen to thirty minutes. As soon as the attacks ceased he was given calomel 3i. For four hours he rested perfectly. At 10.20 P.M. he felt another attack coming on. Gave him calomel 3ss, which arrested it at once.

February 19th, 10 A.M. Found patient just over a paroxysm caused by noise of children. Lasted twenty minutes and was moderate. First spasm in twelve hours. Bowels had moved moderately twice. Dejections dark green. About same time vomited some green viscid mucus which contained some of the unabsorbed calomel. Salivary secretion free. Mouth not sore. Tongue clean. Asked for coffee, milk, etc., which he drank in small quantities. February 20th, 9.30 A.M. Patient resting quietly. No return of paroxysms. Bowels moved slightly at 5 A.M. Some vomiting and considerable retching during night. Ulcers making their appearance on the inner surface of the cheeks. Salivary discharge free. Castor oil, $\frac{3}{4}$ i, given at 2 P.M. February 20th, 8 P.M. The oil acted twice, moderately. Dejections green. Symptoms of ptialism pronounced. Takes milk every two hours, and occasionally a cup of coffee with bread in it. Kidneys acting well. Complaints of soreness and stiffness about the nucha. Directed gargle of infusion of white-oak bark with alum and honey. (Quer. alba cort., a small handful, aqua bulliens Oi, alum $\frac{3}{4}$ i.) February 22d, 5 P.M. Quiet since last report. Mouth and ala nasi sore. Pain and stiffness in jaws. Gums swollen and spongy. General stiffness of the muscles. Takes nourishment freely. Sleeps some when everything is quiet. In conversation he told me that during the previous week he was irritable. Quarrelled with his wife. Said he had to make a strong effort to drink water or other fluids. The sound of pouring water made him tremble. During the spasms he felt a disposition to tear or rend everything around him. He believed that a cupful of water poured on him would have given him the strength of a dozen men. Said that he felt something like a knife cutting his stomach during the spasms. He then described a feeling of numbness in both ankles before each attack, which ascended in waves toward his head, and when it reach his breast he was seized with the paroxysm. Said he felt a dread of something he could not describe.

March 3d. The patient sat up all day. Appetite very good. Bowels regular. Has been taking subcarbonate of iron since Wednesday last. Mouth nearly healed. Says that he feels some aversion to water. Pouring water causes a thrill through his whole body. Occasionally has frightful dreams in which a large yellow dog

plays a prominent part. March 6th. He walked out to-day and I ceased attendance. In a month he was in robust health, and engaged in his usual occupation. Amount of calomel exhibited in Dr. J. E. H. Ligget's case 270 grains; in my case 260 grains.

A CASE OF HYDROPHOBIA.

By C. GERSTMEYER, M.D.,
OF TERRA HAUTE, INDIANA.

I WAS called to see the little daughter of J. K., living one mile south of Terra Haute one night at two o'clock. The father was walking the floor, with the child's arms clasped tightly about his neck. The child's countenance was expressive of great terror. The father said the child would have a convulsion if he ceased walking. I walked by his side and touched the child's hand, when she had a terrible convulsion. When the spasm had subsided she begged me not to come near her or touch her again. I sat down, the father continued walking the floor and the child continued to have convulsive "shivers." The mother asked me what ailed the child. I said I did not know, I had never seen anything like it before.

The mother then said that they had had a vicious but useful watch-dog which they kept tied up in the day-time and turned loose at night. He would run over to the slaughter-house and fight with other dogs. One morning about six weeks ago her husband called the dog but the dog was sullen and would not come so he dragged him to the kennel by his collar and tied him. At 10 A.M. the little girl went to the kennel to feed the dog when he bit her in the face. When Mr. K. came home he killed the dog. The wounds in the child's face healed quickly and there was nothing unusual noted until the previous evening. The children had peanuts and the little girl said laughingly that she could not chew them. Later at supper she rather peevishly complained of not being able to swallow her tea and ate no supper. After supper she played with the children as usual. At midnight the parents were awakened by the child's screams. She was in convulsions and looked as if she was badly frightened and wanted to hold on to her father. She was perfectly rational.

I remembered that some one advised the application of cold water to the spine and back to control the convulsions of hydrophobia and asked the mother to get some towels and cold water. The father was still walking the floor and I applied the wet towels to the child's back. She promptly had the most fearful convulsion I ever witnessed but I persevered with the cold applications until the child asked to be put to bed. The cold applications were continued, she had no more convulsions and went to sleep.

I saw her again the next morning. She was in bed and her mother said the spasms could be controlled by the cold applications. I saw her again at 2 P.M. She was sitting on her father's lap, had a frightened expression of countenance, looked rather wild, and was very talkative. She said to me, "Doctor I am better, give me some medicine, I want to get well." I put a few drops of spirits of

niter into a cup of water and offered a teaspoonful to her. She said, "No, let me have the spoon." I held the cup so she could dip out the supposed medicine herself. The movement of her hand from cup to lip became more and more rapid until she became convulsed all over. She could not swallow. My next visit was at 10 P.M. She was dead. The mother told me she had no more convulsions after I left. At 6 P.M. she ate some bread and butter with tea which she seemed to relish. She then fell asleep and died without waking and without a struggle.

THERAPEUTIC NOTES.

Partial Resection of the Testicle for Tuberculosis.—DELORE (*Centralbl. f. d. Krank. d. Harn- und Sexual-Organen.*, January 21, 1899) advocates an exploratory incision along the convex border of the testicle in cases of tuberculosis of this organ, to be followed by a partial resection of the diseased tissues leaving as much of the rest as may be. The inspection of the testis from its surface often gives a false impression that it is sound when there are nodules of tuberculosis in its center. This danger will be avoided by splitting it up in the manner advised, when after removal of any such nodules the organ may be sutured. The presence of even a portion of the testis in the scrotum, after the removal of the epididymis, is of considerable value to the individual from a sexual point of view.

Treatment of Soft Chancres.—GRINEPERTE (*Rev. de Therapeut.*, January 13, 1899) has employed in ten cases of soft chancre the following treatment: Twice a day a local bath is given in a 2-per cent. solution of creolin at a temperature of 38° to 42° C. (100° to 108° F.), lasting for fifteen to twenty-five minutes. The ulceration is wiped and powdered abundantly with salol and bandaged. In two or three days it dries up entirely and does not secrete any more. At the end of a week cicatrization commences and completes itself in two or three days, forming a solid elastic scar. The baths are to be continued until the healing is complete. The average duration of treatment was eleven days.

Two New Methods of Treating Sciatica.—BUCELLI (*Gaz. heb. de méd. et de chir.*, February 12, 1899) applied the method of Negro (cutaneous digital compression) in fifty-four cases of sciatica, with good results. In all the patients who were cured, the sciatica was of recent date, nine to forty-seven-days' duration, and no marked neuritis was present. Amelioration usually appeared at the end of the first treatment, and increased progressively. In general it may be said that the treatment by compression had a better effect in the cases in which the pain was located at definite points, and in which there were no trophic disturbances. Another method of treatment, that advised by Bonuzzi, was applied in thirty-two cases with the result of a complete cure seventeen times and improvement ten times. The patient was stretched upon his back on a horizontal plane. The trunk was held firmly by an assistant, and the chief took hold of the fully

extended leg, and flexed it as far as possible on the body, the knee being held straight meanwhile. This was done slowly and thoroughly. This method of treatment, was most successful in cases of neuralgia pure and simple, without complication of neuritis.

Solution of Calcium Chlorid in Gynecology.—Calcium chlorid, says a writer in *La Presse Medicale*, December 24, 1898, is an antiseptic of great power and deserves an especial place in gynecologic treatment because of its faculty of dissolving albumens, while corrosive sublimate, creasote, nitrate of silver, etc., coagulate albumen and are thus prevented by their own action from contact with the diseased surfaces. A strong solution is made in the following manner: Three ounces of fresh calcium chlorid is added to thirty-six ounces of water. The mixture is shaken and allowed to stand one hour. It is then filtered through double paper into a bottle holding one quart. This bottle should be of dark glass and closed by a glass stopper, sealed with a little paraffin. For use a glass of this strong solution is mixed with nine glasses of hot boiled water, so that the whole shall have a temperature of 40° to 50° C. (105° to 122° F.). This solution may be employed in lotions, douches, compresses, and tampons; in vulvovaginitis, endocervicitis, both external and internal, in inoperable cancer, etc. It shortens the duration of acute inflammation considerably, and is particularly useful in the treatment of endocervicitis, with glairy mucous discharge. Such a solution of calcium chlorid, the cost of which is almost nothing, is ten times more valuable as an antiseptic than bichlorid of mercury and, being neither caustic nor poisonous, may be safely used for intra-uterine injections in puerperal infection.

Wet Dressings of Alcohol.—ZANGGER (*Lancet*, January 28, 1899) has produced the greatest relief in inflammations of various kinds, felons, lymphangitis, furunculosis, etc., by covering the inflamed areas with gauze and cotton saturated with strong alcohol. Over this is placed a sheet of gutta-percha tissue to prevent the alcohol from evaporating, and the whole is held in place by a bandage. In numerous cases such a dressing was used alternately with a wet-dressing of 1:2000 bichlorid of mercury in water, or after the failure of such a dressing to control the pain and swelling, and the rapid improvement under the alcohol applications left no doubt in his mind that it was far superior to a watery dressing. The dressings are not serviceable in chronic glandular swellings.

The Treatment of Delirium Tremens by Atropin.—TOUVIME (*La Semaine Med.*, January 11, 1899) has tested in some forty cases the effects of the injection of atropin in the delirium of alcoholism, and has found that the injection of 1/200 to 1/150 of a grain if preceded by a warm bath and cold applications to the head will generally suffice to quiet a patient in twenty or thirty minutes. In certain cases the good effects are delayed however for some hours. If there is much muscular action the drug has an exciting effect for a few minutes, and then its calming action begins. Such a patient should receive as his first injection only half the maximum dose, and every

ten hours a slightly increased dose, until the maximum of 1/150 of a grain is reached. Usually only two or three injections will be necessary. If there is pneumonia the baths are omitted. In very severe cases of delirium Touvime begins treatment with the administration of 80 or 90 grains of diuretin in an ounce of water. This produces sleep, and after that the atropin is injected.

A single injection of atropin each day is of benefit in the exacerbations of dipsomania. The patient should be kept in a somnolent condition by the administration of the following mixture, which is to be given in teaspoonful doses every fifteen to thirty minutes till the desired effect is obtained:

℞ Chloral hydrat.	3 ijs
Ext. thebaic	gr. j
Aquæ	℥vj. M.

Milk-Leg in Typhoid Fever among Soldiers.—DA COSTA (*Internat. Med. Mag.*, January, 1899) found that twelve per cent. of 135 soldiers treated for typhoid fever in the Pennsylvania Hospital suffered from milk-leg. This is six or eight times as frequent an occurrence of this complication as has generally been noticed. No sufficient reason could be assigned for this, as they had not been subjected to long marches or other exhausting exercise. This trouble has usually been ascribed to phlebitis, but there is not necessarily any inflammation of the vein antecedent to the thrombosis. If present it causes pain, which is otherwise absent. The leg should be elevated, and hot lead-water or witch-hazel applied to relieve pain, to be followed by strips of belladonna plaster if pain continues. Absolute rest is essential. It is of the utmost importance that the patient does not get out of bed too soon. When he does get up he should have either an elastic stocking or flannel bandage. Sometimes there will be pain and swelling of the leg for as much as eighteen months afterward.

Treatment of Tubercular Cystitis by Iodoform Oil.—RENIAC (*Gas. heb. de méd. et de chir.*, January 29, 1899) reports fourteen cases of tuberculosis of the bladder which were treated by iodoform in liquid vaseline. Since the oil floats upon the surface of the water in the bladder, it is possible for the patient by stopping the stream as soon as the first drop of oil appears to retain the oil in his bladder for several days or a week or two. When it has all been ejected a new quantity is introduced, usually an ounce, containing 25 grains of iodoform. By this means there is made a continual application of the medicated oil to the diseased parts, and not only are the pains relieved, but the healing effect of the iodoform is manifested to a marked degree. Of the 14 patients so treated, 6 were greatly improved, 7 were improved, and only 1 was not favorably affected.

For Cardiac Disturbances During Thyroid Treatment.—It has been found by BEDARD and MABILLE in experiments on dogs, that if Fowler's solution be administered during a course of thyroid treatment no cardiac disturbances occur. The application of this fact in human practice has, therefore, been suggested.

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SATURDAY, MARCH 18, 1899.

RABIES IN AMERICA.

THE New York Board of Health has performed a distinctly meritorious as well as scientific service to the American medical profession in seriously taking up the investigation of the existence in this country of rabies or hydrophobia. The results of that investigation up to date are presented in Dr. Follen Cabot's paper which appears in this issue. Those interested in the subject (and what medical man is not?) will find some further interesting facts in the discussion of Dr. Cabot's paper at the meeting of the Section on General Medicine of the New York Academy of Medicine which is also published in this number.

For various reasons a certain amount of doubt has existed in many, even medical, minds as to the occurrence in this country of genuine hydrophobia. From this false assumption has come at times the thought, not infrequently expressed, that hydrophobia in Europe might be only a delusion, a severe functional neurosis on a psychic basis, rather than the dread disease itself. Pasteur's reputation as a great scientist has suffered in the minds of many American physicians because of his invention of the

preventive treatment of rabies. Certain American views on this matter have been the subject of no little opprobrium abroad. The calm assumption by certain people that practically the whole profession of several great European nations could be utterly deceived on a subject like this was almost too much to forgive to even American self-sufficiency. The quizzical looks that gathered on Russian doctors' faces at the last International Congress at Moscow, when an American medical visitor said that there were doctors in America who doubted the existence of hydrophobia, was one of the silent but indelible impressions of the meeting. The Russians could only think of it as a huge joke after the American fashion, for rabies needs no special seeking to be found in Russia.

Cabot's work, in connection with the laboratory of the New York City Board of Health, shows that rabies unfortunately does exist in this country. A number of indubitable cases have occurred recently on Staten Island. There were, not long ago, at least two foci of the disease in New Jersey, as the discussion at the New York Academy of Medicine shows, while Dr. Frothingham is authority for the statement that a series of cases of true rabies is in progress, at least among animals, in the vicinity of Boston. We have reported in our columns two cases from Long Island within the past two months in which inquiry among medical men who had been close to the patients gave us practically the assurance that they were cases of true rabies. We printed the report of a case from one of the Western States not long ago, and we publish two more this week in which the evidence seems conclusive that the disease at work was genuine rabies.

Now our object is not to raise a disquieting mad-dog scare, nor to terrify people accidentally bitten by a perfectly healthy pet animal into rushing off to receive the Pasteur preventive treatment for rabies. Even when bitten by a really rabid animal the chances of hydrophobia developing in any particular case are not very great. Bites are often through the clothing and the infectious material is absorbed from the fangs by the cloth and does not reach the circulation, and in cases in which the bites are on exposed parts the person bitten is in many instances not susceptible to the disease at the moment and escapes infection. We wish merely to insist on the

fact that rabies exists among us here in the United States and that proper precautions to prevent its spread are necessary.

There are entirely too many vagrant animals on our streets. They are liable to be the sources of other diseases besides rabies. Dr. Cabot's and Dr. Frothingham's remarks as to quarantine and the registration of dogs deserve the most serious attention. An educated public opinion in the matter will do much to make possible the enforcement of existing laws and smooth the way for future enactments. Too many medical men in this country have held halting views on the subject of rabies, and the result has been a failure to disseminate among the public well-grounded intelligent information regarding the regulation of the life and habits of dogs. Proper precautions rigidly enforced for a few months with observation of suspected animals would rid us entirely of all danger in the matter. Let us hope that the work so well done by our Board of Health will not be unproductive of beneficial results.

ANIMAL SUFFERING VERSUS HUMAN SUFFERING.

WE have purposely refrained from commenting on a subject that occupied quite a little public attention some weeks ago, because we wished the medical side of the case with regard to hydrophobia to be before the public in order to lend weight to our comment. There is no longer any possible doubt of the existence of the disease in our neighborhood nor of the fact that within the last year or two at least three human beings have died of it.

Knowing these facts it is clear how completely unjustifiable was a recent decision of certain authorities of the Society for the Prevention of Cruelty to Animals of New York City, in refusing to give up certain parts of a suspected animal that had bitten certain people residing near a recognized focus of the disease, in order that it might be decided definitely that the animal had or had not had rabies. The Society for the Prevention of Cruelty to Animals pooh-poohed the idea that rabies existed on Staten Island, and had an autopsy of the animal made from which they pretended to be able to conclude that it had not died of hydrophobia. What possible grounds the Society could have for such assurance in the present state of our knowledge of the post-

mortem lesions of rabies no one can imagine, but it absolutely refused to allow any portions of the dead animal's medulla to be used for inoculation into other animals though all authorities are agreed that that is the *only* way to decide *with certainty* as to the existence or non-existence of rabies in a given case.

The inoculations, if successful, would have given to two animals for a few days a modicum of pain; for animals, as a rule, acquire the dumb or paralytic form of the disease. If the inoculations had failed to produce the disease human beings would have had lifted from them a serious weight of mental suffering extending over months. All necessity of submitting to the inconveniences of the Pasteur treatment would have been dismissed from their minds, and their friends would have been at once relieved of all anxiety. On the other hand if the inoculations had proved successful, definite absolute indications for treatment of the individuals affected would have been present, as well as for definite steps looking to the welfare of the community.

All of this was prevented by the unwarrantable presumption of the Society for the Prevention of Cruelty to Animals: (1) that rabies does not exist in the neighborhood of New York; (2) that the suffering of one or two animals for a few days is to be weighed against prolonged serious human suffering and an important question of public health; and (3) that the final adjudication of the question must rest upon an exaggerated disproportionate sympathy for animal suffering.

We are thoroughly in sympathy with the movement for the prevention of unnecessary suffering on the part of animals. We appreciate the great good work that the Society for the Prevention of Cruelty to Animals has done in this country, but we deprecate these exhibitions of a false sentimentality in favor of animals that sometimes characterize the action of certain members in authority in the Society. Let us care for the animal by all means, but let us bear in mind that our brother-man must be the first object of our care. Let us look at things in their proper proportions and appreciate the relations among creatures, without allowing hyperesthetic sensibility, fostered by the autosuggestion of endowing animals with feelings that only supersensitive human beings have, to fatally warp our judgment and hurt the very cause we are trying to help.

PNEUMONIA AND THE DOCTORS.

UNDER the above caption the *New York Times* of Monday last comments editorially on Mr. Kipling's recovery from his recent severe attack of double pneumonia. "Hereafter," says the *Times*, "when a physician loses a pneumonia patient of good constitution and under forty what excuses can he hope to give that will satisfy the friends of the deceased? We do not see that he can give any. They will be prone to believe that what has been done can be done again."

This comment is typical of the position the non-medical mind is very apt to take with regard to medical questions, because it assumes a simplicity of process in disease that scientific medical progress is showing us clearer every year exists nowhere in the domain of pathology.

Even in uncomplicated cases physicians are not called upon to treat simply the pneumonia but the patient suffering from pneumonia. At a given moment the tissues of a certain individual, for reasons in many cases not quite clear, become a favorable culture medium for the growth of a little plant, the pneumococcus. This little plant is present very often in the sputum of healthy individuals for long periods without causing any untoward effects. Once it has taken root, as it were, its growth depends on the continuance of the favorable tissue conditions that allowed the original implantation. Natural forces in the body at once begin to react to preserve the human organism. It takes a certain number of days, usually 5, 7, or 9, before the so-called critical period is reached and Nature's triumph is announced.

Medical science at present can do nothing to abort the pneumonic process. Physicians can only stand by and assist natural forces in their struggle, can only watch for the first sign of flagging heart to stimulate it judiciously, can only combat the weakening effect of excessive temperature by the various antipyretic methods. The ultimate issue of the struggle depends on the patient's constitution and his power to react against the physical conditions mechanically interfering with respiration in his lungs, and the toxins which are produced during the growth of the pneumococcus and absorbed into the system. Some idea of the poisonous nature of these toxins may be gathered from the fact that they are

probably not unlike the alkaloidal poisons, strychnin, aconitia, morphin, and the like, which, it is to be remembered, are also of vegetable origin. For despite the oft-repeated cry of the quack that his medicines can do no harm because forsooth they are herbal remedies, *i.e.*, are obtained from plants, it is from the vegetable kingdom that medicine derives her most potent drugs.

Had we an antitoxin for pneumonia as we have for diphtheria then we would be able to attack the disease directly, for if we could prevent the weakening of the system by neutralizing to the toxins Nature would very soon dispose of the pneumonic process in the lung as she does of diphtheria under similar circumstances; we could anticipate the crisis before any serious organic exhaustion had taken place. We cannot, however, and so our treatment for the present at least is only supporting. As a rule, with very few exceptions, "pneumonia patients of good constitution under forty" react successfully against the disease, but in no case can an absolutely favorable prognosis be given and for reasons which may be briefly summarized as follows: First, seemingly healthy people often reveal unexpected weak points in their systems under the strain of disease. Second, the pneumococcus does not limit itself to the lungs in some cases but invades other organs, even the central nervous system, making serious complications. Third, different varieties of the pneumococcus are very variously virulent, *i.e.*, some of them produce much more toxins than others, just as one poppy-plant produces more opium and its alkaloid morphin than another. Fourth, sometimes at the same time with the pneumococcus other micro-organisms are implanted in the lungs. This is notably the case with the influenza bacillus in times when that disease is epidemic. As may be readily understood the absorption of influenzal toxins with those of pneumonia adds seriously to the danger. Fifth, at times so-called pneumonia is not due to the pneumococcus but to other micro-organisms that often in mixed infections produce the signs of consolidation to be found in ordinary pneumonia. These cases run a very irregular course and the crisis is often delayed or absent.

Because the exercise of the highest medical skill and the most careful nursing has fortunately saved Mr. Kipling there is no reason why even the same

skill and care will save every other patient. The *Times* says very well: "Eternal vigilance is the price of success in the treatment of pneumonia patients. It was the unremitting and skilled attention, the uninterrupted readiness at every instant to give the patient the help he needed in the fight that saved this indispensable life to his family and the world of letters." It is the supremest care that guarantees as far as lies in human power against a fatal issue in pneumonia; but even with this care there will, until the much-wished for, much-worked for, specific medication of an antitoxic serum comes, always be some fatal terminations of the disease even under circumstances that at the beginning seem favorable.

NOTABLE BOOKS.

We present this week a review of Professor Landouzy's "Clinical Lessons in Serum-therapy." It forms the first of a series of reviews which will appear in our columns during the present year, of the most notable, recently published books. Only books of general interest by great teachers and investigators, or which are conspicuous by their unusual merit, books that every one should know at least something about, will find a place in this department.

Professor Landouzy's instructive *résumé* of the present state of serum-therapy will be followed by a review of the latest work of Professor Waldeyer, the distinguished anatomist of Berlin, entitled "Das Becken" (The Pelvis). This in turn will be succeeded by "Guia Practica, Higienica y Medica del Europeo en los Países Torridos (Filipinas, Cuba, Puerto Rico, Fernando Poo, etc.)," by Federico Montaldo. (A Practical, Hygienic, and Medical Guide for the European in Torrid Countries (especially the Philippines, Cuba, Puerto Rico, etc.). The work was crowned by the Royal Academy of Madrid just before the Spanish-American War, as a book designed to furnish accurate information to intending colonists in the Spanish possessions that have since become ours. A review of the work on "Hirn Chirurgie," by Professor von Bergman of Berlin in its latest edition will follow in due course, and other books of the same practical, scientific, and progressive character will have a place.

ECHOES AND NEWS.

Health of Havana Improving.—The death-rate at Havana for the week ending March 3d was lower than at any time since 1894. During the week there were 187 deaths from all causes. There were no deaths from either yellow fever or smallpox.

The Climate of Cuba.—Dr. John Guiteras, in a lecture delivered at the University of Pennsylvania on March 6th, stated his opinion that sixty per cent. of Americans who go to Cuba for the first time will contract yellow fever, and the death-rate among the sick will be from five to six per cent.

Total Deaths in the Army.—On March 10th the following statement was issued at Washington showing the total number of deaths reported to the Adjutant-General's Office between May 1, 1898, to February 28, 1899: Killed in action, 329; died of wounds, 125; died of disease, 5277; total, 5731.

Poison in Wall-Papers.—Dr. E. M. Chamot of the Chemical Department of Cornell University states, as a result of a chemical analysis of wall-paper, which he has been carrying on for several months, that nearly all wall-paper sold at the present time contains arsenical poisons, some of them in large quantities.

Trained Nurses Celebrate.—More than 800 trained nurses, representing twenty different schools, celebrated at the Waldorf-Astoria Hotel on the evening of March 6th the formation of the first class of trained nurses in Bellevue Hospital twenty-five years ago. Many physicians were present. The orator of the evening was Dr. William M. Polk.

Dr. Deaver to Leave the University of Pennsylvania.—The resignation of Dr. John B. Deaver, as Assistant-Professor of Applied Anatomy, has been tendered and accepted to take effect at the end of the present academic year. By this resignation the Medical Department of the University loses another eminent instructor and valuable member of its teaching body.

An Anniversary in Honor of Volta.—On May 4, 1899, the city of Coma, in Italy, will celebrate the hundredth anniversary of the day on which Volta, one of her citizens, invented the pile which goes by his name. On this occasion an International Exhibition of Electricity will be held, and a section will be devoted to the various medical applications of electricity.

Home for Aged Invalid Poor.—The Pringle Memorial Home of New York City was incorporated on March 3d. Its purpose is the care of invalid, aged, and indigent men. Dr. Albert W. Ferris of New York, Richard B. Ferris of Mount Vernon, Stephen V. White of Brooklyn, James W. Manier of Binghamton, and Clarence M. Trent of Buffalo are the directors.

Factors in the Production of Degeneracy.—E. S. Talbot, M.D., D.D.S., of Chicago, in his book on "Degeneracy,

Its Causes, Signs, and Results," considers tobacco a causative agent of greater importance than alcohol or opium. He regards intolerance of alcohol an expression of degeneracy. Opium is in his opinion a considerable factor in the production of insanity.

Board of Examiners in Lunacy.—There has been introduced in the Legislature at Albany a bill providing for the appointment of a Board of Lunacy Examiners for New York City, to consist of eleven physicians (one of whom is to be the chief examiner), in place of the four physicians who have heretofore done the work for the greater part of the territory now embraced within the enlarged city.

Chlorin in Pneumonia and Diphtheria.—Dr. Bracelin's "corrected chlorin," which has already been used at the Kingston Avenue Hospital, Brooklyn, is now employed in the treatment of diphtheria at the Willard Parker Hospital for Contagious Diseases in New York City, where it is used to some extent in the place of antitoxin. The New York City Health Department is also experimenting with this gas in cases of pneumonia.

Hospital Ship at Savannah, Ga.—The United States Hospital ship "Missouri," arrived at Savannah, Ga., on March 10th from Cuba with 226 sick soldiers. The sick troops will be placed in the Government Hospital at Savannah which has just been completed. The men are suffering from malaria, rheumatism, typhoid fever, and from the results of traumata. None among the soldiers is dangerously sick. Quite a number are from the 202d New York Regiment.

"Curtain-Faced Man" is Dead.—Michael Kelly, sixty-four years old, Bellevue's oldest patient, died in Ward 3 on March 7th after a continuous residence of twenty-five years in the hospital. His disease was fibroma molluscum. There were a great number of fibromata upon various portions of his body, the most conspicuous of which was an enormous pendulous mass extending from his scalp down over his neck. He was a subject of demonstration at many medical lectures.

Mr. Kipling's Physicians Congratulated.—At the regular bimonthly meeting of the Council of New York University on March 6th the following resolution was adopted: "The New York University Council hereby extends its congratulations to the Dean of the Faculty of Medicine, Dr. E. G. Janeway, and his associate in the Faculty, Dr. Theodore Dunham, upon the success which has attended their efforts to save to the cause of letters and of mankind the life of Rudyard Kipling."

New School for Nurses in New York.—The training-school for nurses at present connected with the New York Post-Graduate Hospital is to be supplanted by a new school, which will cost \$100,000, and which will be known as the Margaret Fahnestock Training-School for Nurses of the New York Post-Graduate Hospital; it is founded by Harris C. Fahnestock in memory of his wife. Three lots in Twentieth street, opposite the Post-Graduate Hos-

pital, have been purchased, and it is expected that the building, which will contain accommodations for seventy or more nurses, will be completed within the year.

New Cornell Medical College.—The plans for the new medical college which Colonel Oliver H. Paine will present to Cornell University have been filed. The building will be five stories high and will cover the entire west side of First avenue from Twenty-seventh to Twenty-eighth street. There will be three great amphitheatres, two of which will be two full stories in height. The dissecting-room will be 50 feet wide and 170 feet long and will be lighted by the largest skylight in New York City. Steam-heat, electric lights and a refrigerating plant will be features. It is expected that the building will be ready for occupancy by the fall term of 1900.

The Death-Rate at Chickamauga.—A statement compiled in the Adjutant-General's Office at Washington shows that the deaths from disease from the first occupation of the camp at Chickamauga in the middle of April to its abandonment in the middle of September, and including the four battalions which remained to January 1st, were 341, or a little less than half of 1 per cent. The deaths of the Volunteer force which was mobilized at Camp Thomas up to December 2d, which was 2½ months after they had been withdrawn from Camp Thomas, and after the close of all campaigns in which any of them participated were for this period of six months 1.61 per cent.

Perfection in Illustrative Art.—The most striking reproduction in colors of a pathological specimen that we have ever seen, the most perfect in its finish, in its truth to Nature, in its delicate coloring, and complete detail is contained in the current number of *The Journal of Experimental Medicine*. It is the picture of the heart taken from a case of gonorrheal endocarditis, which is reported by Drs. Thayer and Lazear of Johns Hopkins. Dr. Thayer presented the original water-color drawing of the specimen before the Section of Medicine at the International Congress at Moscow where it made quite a sensation among the foreigners, was greatly admired, and elicited frequent enquiries as to how it was done and where, and who, had done it. We are glad to see that this artistic gem has been reproduced so worthily. It is a distinct step in advance in medical illustration at least. The editorial management and publishers of *Experimental Medicine* have our congratulations on the new model for imitation which they have furnished medical illustrators all over the world.

Human Rabies in the Philippines.—It seems of interest to note, as we happen to be devoting considerable space to hydrophobia this week, that there are two distinctly characteristic forms of this disease that occur in the Philippines as a consequence of the bites of rabid animals. According to the *Cronica de Ciencias de Filipinas* (we believe this is the first time that a medical fact has been gleaned from a scientific journal published in our new possessions) the disease under one of these two forms is by no means uncommon on the islands. The writer of

the paper describes a form in which the sight of water or of anything that suggests swallowing, sets up spasms that become general. In a severer form which he calls arophia, the slightest sensory disturbance, a breath of air, a flashing reflection from a shining object, a slight noise, will initiate the spasmodic attacks. Besides these divisions of the disease according to its severity there is another classification made; the furious and paralytic forms of the disease. It is noted that the furious form may be accompanied by a maniacal excitement while the psychical manifestations of the paralytic form are usually the symptoms of depression and melancholia. The therapy of the disease consists of prompt cauterization followed for weeks by some form of herbal tea that causes profuse respiration. Under this method of treatment most of the cases are said to recover. Unfortunately no statistics or details of cases are given to substantiate this very interesting statement. We cannot refrain from remarking that the whole exposition of the subject however, is thoroughly scientific. The forms of the disease described are well known especially in animals. The fact that the spasms in severe cases are initiated by a breath of air, has been looked upon as almost pathognomonic by the last European authority who treated the subject of hydrophobia exhaustively, in the article on "Lyssa" in Professor Nothnagel's series on "Special Pathology and Therapy." We shall evidently find some brothers in the profession in the Philippines who are not unworthy of their new relation with the American fraternity. If they have, as this one seems to have had, a little over confidence in the effectiveness of their remedies we do not think that they will for that reason be any the less sympathetic to American doctors.

NOTABLE BOOKS.

LES SEROTHERAPIES, PAR L. LANDOUZY.¹

FOR those desirous of obtaining material for lectures and articles on what is most recent in serum-therapy this book is a treasure-house. To those who fear that serum-therapy will ever entirely displace the older methods of treatment the author says very pertinently in the preliminary lecture:

"Do not imagine that even if serum-therapy and opotherapy should respond more to the demands of medicine that you would not have to care about the old therapeutics which knew so well how in many a pathologic state to bring into action the vis medicatrix naturæ. Do not imagine that the success of serum-therapy will lessen your importance. There will always remain to be cared for, to be treated, to be managed, to be encouraged, only too many unfortunates, some with hereditary affections, with diseases of nutrition, with occupation and alimentary toxemias, the victims of accident, of youthful indiscretion, of dietary errors, of physical or intellectual overwork, the

consequences of the struggle for existence, and of the neglect of hygiene inevitable even in our day."

Of course as a good Frenchman he gives Pasteur his proper place as the founder of serum-therapy. All the credit that is due to Pasteur is often not accorded him in America because our medical development of late years has been influenced mainly by German medical thought. Then, too, the slurs cast upon the antirabies injections by the Germans produced an unfortunate prejudice as to Pasteur's other work here; but all that is gone now, even the Germans have been converted and Pasteur is to take the place Landouzy gives him as the bright particular star of modern medical biology.

The review of the deaths attributed to diphtheria serum fills a most interesting chapter. Each is discussed in detail. We note with regard to the most famous one, the Langerhaus child in Berlin, after whose death the father, Virchow's assistant, announced next morning in the papers that it had been killed by *Behring's diphtheria serum*; that though 1300 doses of this identical serum were used in other cases not a single fatality or complication was noted. Landouzy calls special attention to the fact that ozena yields in a majority of cases to injections of diphtheria serum and in the other cases improvement almost invariably follows.

The question of the expectation of life after tracheotomy is an extremely interesting one. Ten years ago Landouzy reviewed the subject in a series of lectures in which he showed that tuberculosis nearly always carried off tracheotomized patients within a comparatively few years after the operation in practically all cases. He now repeats this conclusion and in the light of his riper experience and continued observation on the subject it must carry great weight. He quotes Dr. Simon of Paris, who has passed his life among children and who does not know of a single living adult who had been tracheotomized as a child.

For tetanus Professor Landouzy insists very much on the value of preventive inoculations. When he delivered these lectures the intracerebral injection of tetanic antitoxin had not been thought of. Tetanus antitoxin can now be produced of such marvelous antitoxic value that in all cases that carry with them in the slightest degree the suspicion of infection with tetanus germs he advises the injection of a preventive dose. Tetanus serum is now made that is efficient to one-trillionth; that is, an animal injected with one-trillionth of its weight of the antitoxin can with impunity be given an otherwise absolutely fatal dose of tetanus toxin and will survive without manifesting any symptoms. In human beings the preventive dose would be infinitesimal—a minim or less.

The lectures on antivenomous serum are of more interest to Americans now that our recent acquirements in the tropics and the East are apt to bring our soldiers and colonists more in contact with venomous serpents. The discussion of the subject is complete, the English as well as the French contributions being thoroughly reviewed. The diffusibility of snake-venom and the absolute necessity for rapid action after snake-bites is illustrated by an experiment on a rat. An injection of cobra-

¹ Les Sérothérapies. Leçons de Thérapeutique et Matière Médicale professées à la Faculté de Médecine de l'Université de Paris. Par L. Landouzy. Paris: M.M. Georges Carré et C. Naud, 1898.

venom is made into the rear third of a rat's tail and one minute later the tail amputated. Death takes place nevertheless from the poison.

An interesting review of a subject not often heard of outside of France is concerned with the serum-therapy of the manifestations produced by the invasion of the colon bacillus of parts outside the intestinal tract. Italian workers have shown that immunity is conferred on animals by certain soluble products of cultures of the bacillus coli. As urinary infection is nearly always caused by the colon bacillus finding its way into the bladder, Albarran and Mosny have tried certain products of the bacillus for therapeutic purposes in these cases and with encouragingly good results.

Landouzy had the opportunity to study Maragliano's serum very carefully in Paris in his own clinic. He thinks it does relieve certain symptoms of the disease, as the fever and sweating that are due to the toxins absorbed from the tubercular foci, but does not think that it influences the tubercular process itself. It is antiodotal but not anti-infectious; it is antituberculous but not antituberculous; antitoxinemic but not antimicrobial, to quote Landouzy's own series of adjectives.

A series of very interesting lectures is devoted to what Landouzy calls artificial serum-therapy, *i.e.*, to the injection of normal salt solution. He insists that this shall be prepared from recently *boiled* distilled water, not from aqua destillata that has been standing for some time. He uses the normal salt-water injections in minimal and maximal doses. Given in from 2-5 c. c. (minimal dose) into the buttocks or directly over the seat of pain he recommends them for their mental effect, in helping to overcome certain bothersome, partly physical, partly psychical symptoms of lipothymiques, *i.e.*, delicate, nervous individuals or convalescents. In maximal doses of a pint and more he considers them extremely efficient in a number of medical as well as surgical emergencies, but this subject is well known.

CORRESPONDENCE.

QUININ IN MALARIAL HEMOGLOBINURIA.

To the Editor of the MEDICAL NEWS.

DEAR SIR:—I send you a volume containing some statistics concerning the use of quinin in malarial hemoglobinuria and a brief article on the pathology of that disease. These have been called forth by the reply to Dr. Hare in the MEDICAL NEWS of January 21, 1899.

I must add my feeble protest to that of Dr. Deffenbaugh to your propagation of a rather fatal therapeutic doctrine, that is largely hereditary in our standard textbooks.

The immediate cause of death in nearly all the cases of malarial hemoglobinuria to which I have had reference, or that have come under my notice, has been "urinary suppression." As this is not a factor in the ordinary malarial manifestations there must be some added element which renders its pathology different, either in kind or in degree, from the other forms.

When this difference has once been clearly defined,

when the pathological condition present in a case of acute malarial hemoglobinuria can be put alongside of that in one of malarial quotidian fever, it may then be seen why a remedy that is antidotal in the one case may be lethal in the other, although the underlying cause may be the same in both.

A national therapeutics can arise from a sound pathological foundation only. This we will not have until a scientific clinical study of the question is made here in the South where this fever prevails.

Many lives are sacrificed each year that might be saved and I am glad to see the question of treatment brought so prominently into notice by your journal. The Johns Hopkins school has done so much in this country to advance our knowledge of the malarial parasite and its effects on the human body that it would seem particularly its province to settle the mooted points on this phase of the question. This work can only be done by those trained for this kind of investigation, and I regret that such specialists and malarial hemoglobinuria are not generally found in the same localities. Very truly yours,

BROOKS COLOMB, M.D.

UNION P. O., LOUISIANA, February 27, 1899.

We too shall be sincerely glad if our articles on quinin in malaria attract renewed attention to certain phases of the question and especially to the use of quinin in so-called malarial hemoglobinuria. In setting forth the practical conclusion that quinin should be freely used wherever malaria is clearly present no matter what the complication, we were but following some of the world's best authorities on malaria. When the original article on quinin in malaria was written the idea was to combat a certain feeling of distrust that had recently sprung up with regard to the free use of quinin in the estivo-autumnal type of malaria which has become familiar to us because of the Cuban campaign. This distrust had been fostered by ill-advised protests, editorial and otherwise, in certain medical journals and had already shown its effect by a tendency on the part of certain physicians to give too small doses of quinin in general, and on the part of soldiers and others exposed to malarial infection by a refusal to take quinin as a prophylactic.

As to the so-called malarial hemoglobinuria we are not ourselves convinced of its malarial origin. It is not merely the expression of an intense malarial infection. It occurs very rarely in Italy though pernicious malaria is not uncommon there. In Europe it occurs frequently only in Greece. It occurs in certain parts of Africa but not in others. In our own South there seems reason to think that it is not due to severe malaria alone, but that there is something specific about it, since it is much more frequently reported in certain malarial districts than in others. The subject is well worthy of study. Meantime excellent authorities insist on the free use of quinin in the condition if there are (sometimes there are not) clear symptoms of malaria with it. That quinin is not its original cause is evident since it does not occur in Italy where quinin is probably used with more freedom than any other place in the world. We shall be only too glad to

welcome from workers in Southern fields contributions that will tend to throw light on this interesting and extremely important question—ED.

MORTALITY FROM TYPHOID FEVER IN PHILADELPHIA.

To the Editor of the MEDICAL NEWS.

DEAR SIR:—When I failed to see my letter to you in your issue of March 4th, though you must have received it in ample time to publish it, and I had no acknowledgment of its receipt, I thought—perhaps too hastily—that you did not intend to publish it, and being desirous that the real facts should be known, I took the letter to the editor of the *Philadelphia Medical Journal*, who kindly agreed to insert it in his paper. This is the explanation, which I think is due you, of the letter appearing in both journals at the same time.

The editor of the *Philadelphia Journal* thought with you that my statistics were too ancient, so that I furnished him with statistics of a later date to be placed in a note to my letter. These figures represent the average death-rate of typhoid and malarial fevers per 100,000 persons living for the seven-years period (1890-1896), and are as follows:

	New York.	Brooklyn.	Philadelphia.	Boston.
Typhoid Fever...	19.72	18.48	44.60	32.48
Malarial Fever...	7.87	16.45	3.04	

These statistics show an even lower death-rate from typhoid fever in Philadelphia than I claimed before, a fall from 69.35 in the preceding six years, or a diminution of about 36 per cent., and the decrease would have appeared greater if I had included the deaths from "malarial fever," but I have not done this as you object, somewhat unreasonably as it appears to me, to consider the two causes of death together. On the other hand in the three remaining cities the decrease in typhoid mortality is shown to have been but about 19, 20, and 17 per cent. respectively, or about half as much as in Philadelphia. If these results are held as a measure of the exertions of the several cities against the spread of the disease, I think it must be acknowledged that Philadelphia has done twice as much in the period named as either New York, Brooklyn, or Boston in diminishing its death-rate from typhoid fever.

The reasons for my taking the older statistics in my first letter were that the accepted measures for the prevention of typhoid fever are practically the same now as they were ten years ago and I believe the older figures to be the more reliable, being based upon the population as returned by the United States census, while later figures are subject to the optimism of their compilers with regard to the increase of population, an optimism likely to be exaggerated in the sanguine atmosphere of New York. But I am generous enough not to regret it when I consider the satisfaction you must have felt at being able to get off once more that time-honored joke with reference to the alleged want of progressiveness in Philadelphia which seems so dear to the hearts of "a certain class of" New Yorkers.

I have to find fault with you in your remarks on my

letter that you start off again on your curious career of misrepresentation. Though I distinctly said at the beginning that I did not intend to defend the presence of typhoid fever in Philadelphia, which no one deplores more than myself, but simply to expose the pharisaical nature of your attack upon the city, you make that the issue and then proceed to tear to pieces the man of straw you have set up. Surely you must know that is an old, and the most discredited, trick of the pettifogger. I should be ashamed of that, my dear fellow. It would take too long and perhaps be unprofitable to expose all of your misrepresentations, but there is one assertion you make in your editorial, and reiterate in your remarks, so contrary to the facts, that I wish to make an issue of it, and I hope you will meet the question in a manly, straightforward way, and not with amusing persiflage. You say, speaking of the prevalence of typhoid fever in Philadelphia, "matters have grown worse not better in the last fifteen years" and "the last year is the worse of the ten," and you insist upon this in spite of my unchallenged statistics which show a decrease of thirty per cent. in late years. You give no statistics, even "manipulated" ones, and I call upon you for the proof of your assertion. I have no doubt you can accumulate to sustain you as many opinions as there are leaves in Vallombrosa, even one from that eminent medical authority the daily *New York Times*, but these without facts will avail you nothing.

RICHARD A. CLEEMANN, M.D.

PHILADELPHIA, MARCH 12, 1899.

[It seems too bad that a medical man should plunge into a controversy on a medical subject and know so little about it, as our correspondent confesses that he knows about typhoid fever in Philadelphia. He now quotes statistics of more than three years ago and wishes to know our authority for the statement that the last one of the last ten years was the worst of them all as regards the deaths from typhoid fever. Why did he not consult the Philadelphia health reports before putting pen to paper on so important a subject?

In our issue of February 4th our Philadelphia correspondent quotes from the annual report of the Medical Inspector of the Board of Health of Philadelphia the number of cases of typhoid that occurred in Philadelphia during 1898 and the deaths therefrom. There were 4749 cases of typhoid in the city, excluding 1348 cases among soldiers in Philadelphia hospitals, and 639 deaths. But why go back to the statistics of other years to say that Philadelphians, all of them, are criminally negligent of their duties as citizens? During the week ending March 4th, there were 443 cases of typhoid fever in their city, and 49 deaths, and during the week ending March 11th, there were 419 cases, with 39 deaths. During the eleven weeks of the year 1899, up to March 11th, there were 381 deaths from typhoid. This indicates the existence of almost a pestilence in the city, and yet *nothing, absolutely nothing* is being done to remedy the matter, and physicians are not wanting to attempt to defend this awful state of affairs!—ED.]

OUR PHILADELPHIA LETTER.

(From Our Special Correspondent.)

TEN-WEEKS' RECORD OF THE TYPHOID EPIDEMIC AND AN EPIDEMIC OF CEREBROSPINAL MENINGITIS—MODERN ANATOMY—TYPHOID COMPLICATIONS—RETRODISPLACEMENTS OF THE UTERUS—PERSONAL NOTES—HEALTH STATISTICS.

PHILADELPHIA, March 13, 1899.

THE end of the week brought the total number of cases of typhoid fever reported since January 1st up to 3424 and the total number of deaths for this period, ten weeks, is 360. During the past week another epidemic has started, one of cerebrospinal meningitis, and thus far, or during last week, 34 cases with 13 deaths have occurred, 5 cases and 5 deaths having been reported on Saturday alone.

A special meeting of the Board of Health has been called for Tuesday, the 14th, for the purpose of discussing the best method of combatting and preventing the spread of "spotted fever" and a memorial has again been presented to the councils urgently requesting immediate action looking to the betterment of our water-supply. Editorials in the press and resolutions from various bodies of citizens seem to have no effect, however, and the merry death-dance goes on.

At a meeting of the Philadelphia County Medical Society, held Wednesday, March 8th, Dr. Edmund W. Holmes read a paper on "Modern Anatomy" which was discussed by Professor Carter of the Central High School, Professor Trotter of Swarthmore College, Dr. Allis, Dr. Forbes, Dr. Mills, Dr. Hewson, Dr. Beattes, and many other men interested in teaching. Dr. Holmes thinks there are three fallacies in medical teaching: large clinics, didactic lectures, and old-fashioned dissecting-rooms. He characterized the medical student of to-day as an investigator and no longer a receptacle for words such as the didactic lecture forces him to be. He believes the didactic lecture should outline the part to be dissected perhaps but believes actual observation should take the place of lectures, that museum specimens should be kept in the dissecting-room and be used, and that the old idea that anatomy can only be learned by dissection by the student is fallacious unless the latter be shown how to dissect and knows what he is dissecting or in other words has some preliminary knowledge of anatomy. Dr. Holmes made a strong plea also for the teaching of histology, embryology, and comparative anatomy in schools preliminary to medicine, thus giving more time in the medical school which with advantage could be used in other ways. He compared the average student who dissects one subject, part by part, to an engineer who has seen one engine taken apart or put together. In conclusion he expressed his belief that the younger men should do the demonstrating and general routine work, thus utilizing didactic lectures as supplements to the course and giving a professor of a branch time for original work and research.

Dr. Forbes followed and said that the "sanctus sanctorum" in the temple of Hippocrates was the dissecting-room, for human anatomy is the basis for all medicine.

Comparative anatomy he considers unnecessary and he believes the cause of insufficient anatomical knowledge is to be found in insufficient time for its study and lack of subjects, though the latter trouble has been partly overcome by the Anatomical Act (for the enactment of which Dr. Forbes did so much). The idea Dr. Forbes tries to follow in his teaching is that of having his demonstrators act as tutors to small sections of students and to personally conduct weekly examinations of the students on the cadaver.

Many unusual and interesting features of the present epidemic of typhoid were reported last week, Dr. Joseph Sailer reading a paper on "Typhoid Ulcer in a Meckel's Diverticulum" and Dr. David Riesman one on "Typhoid Ulcers in the Esophagus."

A symposium on "Retrodisplacements of the Uterus" was held by the Obstetrical Society on March 2d. Dr. Wilmer Krusen discussed the etiology and said that of 1000 women applying to the gynecologic department of Jefferson Medical College Hospital, 199 or 19.9 per cent. had displaced uteri. He called attention to the importance of etiology in the treatment. Dr. J. M. Fisher discussed the diagnosis, Dr. F. H. Maier the non-operative, and Drs. C. Norris and Frank Hammond the operative, methods of treatment.

Drs. J. C. Wilson, John H. Musser and A. H. Hulshizer have been appointed by the Philadelphia County Medical Society as a committee to go before the State Legislature to protest against the Antivaccination bill which is to be discussed on the 14th inst.

Charles H. Heustis, recently appointed health officer by Governor Stone, formally succeeded Dr. Benjamin Lee last week.

The total number of deaths occurring in Philadelphia for the week ending March 11th, as reported at the health office was 520, an increase of 56 over those for a corresponding period last year. The total number of new cases of contagious diseases was 501, reported as follows: diphtheria, 50 cases with 10 deaths; scarlet fever, 32 cases with 1 death; typhoid fever, 419 cases with 39 deaths.

OUR LONDON LETTER.

(From Our Special Correspondent.)

MR. SIMS WOODHEAD SUCCEEDS THE LATE PROFESSOR KANTHACK—THE LIFE OF JOHN HUNTER—DEATH OF THOMAS COOKE, THE FAMOUS "COACH" IN ANATOMY AND PHYSIOLOGY—RANDOM NOTES.

LONDON, March 3, 1899.

THE recent medical event of greatest interest was the election of G. Sims Woodhead to the Chair of Pathology in the University of Cambridge, left vacant by the untimely death of Professor Kanthack. Sims Woodhead needs no introduction to the American profession, as his work for years past has attracted wide attention. He was born in 1855 and graduated in medicine at Edinburgh University in 1878. He taught in the University for several years and in 1890 was elected Director of the Research Laboratories of the Conjoint Board of the Colleges of Physicians and Surgeons, which position he still

holds. His duties at Cambridge will be assumed in April and as yet no one has even been mentioned as his probable successor at the Embankment Laboratories.

The Board of Electors at Cambridge is much concerned over a report published in the *Times* from their Montreal correspondent to the effect that Professor Adami had declined the chair just filled. One of them has taken the trouble to write to the paper stating that the board had held no meeting and no offer or even proposition had been made to any one previous to the formal election of Professor Woodhead.

The annual Hunterian oration was delivered a short time ago at the Royal College of Surgeons by the President of the college, Sir William MacCormac. Special interest was given by the presence of the Prince of Wales, in graceful recognition of his indebtedness to the surgical profession for his rapid recovery from his recent accident. H. R. H. is a man of catholic tastes, which includes even medicine, this being the third Hunterian oration which he has listened to, while he actually holds the honorary degree of Fellow of the Royal College of Physicians. The life and career of the father of modern scientific surgery, both English and German, as Billroth cordially acknowledged, was interestingly passed in review. Born in 1728 on a little Scotch farm he came down to London, a raw country lad at the age of twenty, indifferently educated, and in thirty years had made himself not merely the first surgeon but one of the foremost scientists of the world. He gleaned his facts from every department of natural history and even of chemistry and mineralogy and recognized the unity of life and disease and their laws in all forms of organized beings. He was a tireless worker, rising at half past four to dissect till breakfast-time, seeing patients all the morning, attending to hospital work and performing operations all the afternoon, and attending to case-recording and correspondence and working over his results till midnight. No wonder that at thirty-one he broke down and developed lung-trouble, but this only drove his genius into a new field, for he secured a surgeonship in the army and spent four years abroad in active campaigning. This restored his health and enabled him to lay the foundations of his masterpiece "The Blood, Inflammation, and Gunshot Wounds," most of which is sound surgery to-day in spite of our tremendous advances. It is not generally known that Hunter's celebrated ligation-operation for aneurism was first performed upon a stag. A buck with his horns in velvet was caught, thrown, and the artery supplying one of them tied. Two weeks later circulation was re-established and on cutting down upon the artery it was found converted into a fibrous cord. Encouraged by this he operated upon a popliteal aneurism in the human subject a month or so later, with complete success.

Even bad smells have their uses. The abominable sulphurous odor of ordinary coal-gas is so great an advantage in giving prompt warning of leaks or escapes that the Committee of Experts appointed by the Local Government Board to investigate the dangers of water-gas has brought in the curious-sounding recommendation that no gas that has not a well-marked odor be permitted to be

laid down in cities. It also advises that no form of water-gas should be used by any company except mixed with coal-gas in a fixed proportion to be specified in the company's permit and tested by inspectors from time to time, no gas supplied during the night to contain more than twelve per cent. of carbon monoxid. As the committee consists of Professors Haldane and Ramsay, its recommendations are about as scientifically authoritative as could be desired.

The specialization of medicine still progresses. At the last meeting of the British Medical Association a Section of Life-Insurance Examiners was held and a number of interesting papers read. Now it is announced that an International Congress of Physicians to Life Assurance Companies will be held at Brussels from September 25 to 30, 1899, to which delegates are expected from all over the world.

A unique character in the English medical world has just passed away. This is Mr. Thomas Cooke, the most celebrated "coach" in anatomy and physiology that London has ever seen. Usually the occupation of professional "crammer" for medical examinations is not regarded as the most elevated, but Mr. Cooke was so thorough in his work and so admirable in his methods that he achieved positive fame thereby. The candidate who came to his school to be prepared for an examination was not set to work on text-books, memory-lists, and "tips," but given a set of bones, a lot of dissected specimens, and a cadaver, or put at a laboratory-table and set to work. He taught by objects, not words, and his fame spread until he had a large school with a number of assistants under him. Probably no better proof could be given of the meritoriousness of his work than the fact that the very examining-body for which he prepared students, the Royal College of Surgeons, recognized his certificates of attendance as satisfactory time-credentials, a recognition not accorded to any other private school of medicine. Curiously enough America can claim a small share in his reputation for he was born in the United States but taken to Paris when a mere boy, educated there and served in several of the hospitals and finally settled in London.

Two curious cases of poisoning have just been reported. In one instance a tradesman was given some strong atropin drops for a keratitis by his physician. A few days later his whole family were prostrated with severe symptoms of atropin poisoning, due to the servant having used the drops aforesaid to flavor a pudding. They were promptly and vigorously treated and all recovered, and now the courts are endeavoring to decide whether the drops were put in accidentally or purposely. (The servant did not eat any of the pudding.) The other was a most infantile attempt by a German cook to drug his employer's family with a view to robbery by putting chloroform in their soup. Perhaps he hoped it might work while they were saying grace. As might have been expected the chloroform revealed itself with great éclat the moment the cover was taken off the tureen and no one was a pin the worse—except the cook who had to sleep at the police-station that night.

An excellent step has just been taken by the Local

Government Board with reference to the medical inspection of schools. An order has been issued that no child suffering from any contagious affection of the scalp, skin or eyes shall be admitted to the workhouse (poorhouse) schools of London; that all children shall be examined medically before being admitted to such schools; and that the whole school shall be submitted to a thorough medical examination at least once a month. No doubt this class of schools needs these safeguards badly enough, but they ought to be extended to every school in the country. A weekly or even daily visit of inspection, however brief, by a trained pediatricist and hygienist, who both loves and understands the needs of the young human animal would be of incalculable benefit to our schools.

Another human ostrich has been heard from. An itinerant conjuror, part of whose performance consisted of swallowing pebbles, ranging in size from that of a pigeon's egg down, was brought into Peterborough Infirmary in great distress. Whether he rattled audibly on being shaken is not stated, but an appropriate course of laxatives brought away more than sixty small stones weighing altogether nearly two pounds. The man stated that he had been swallowing pebbles for years and this was the first inconvenience he had ever suffered. Truly the human stomach is patient. Pebbles, however, would seem to be a cumulative poison, like lead and digitalis.

Our unpleasant suspicion of last week in regard to the prospects for revaccination legislation proves to be justified. Mr. Balfour announced in the House a few evenings ago, in answer to a question, that the Government had no intention of presenting any bill dealing with vaccination this session. The Committee on Bills of the British Medical Association will probably introduce a bill but there is little hope of its being reached this session.

Jane White, sentenced to death for the "constructive murder" of Alice Hearnsh by instrumental abortion, has been relieved, but the final form of her sentence has not yet been announced. Both the Home Secretary and the Attorney-General have been fairly bombarded with questions as to how long this ridiculous farce of "constructive-murder" sentences, which are never intended to be carried out, is to continue. Both of them have assured the House that steps will be quickly taken to remedy this legal defect.

The influenza epidemic from which London, in common with the cities of the Continent, is suffering is rapidly increasing. At a recent function nearly one-third of the expected guests sent their regrets on account of it. So far the disease is not of a very severe type but fifty deaths were attributed to it in London last week.

Another of the curiosities of Chinese medicine has recently been unearthed. This is a powder made of salted and dried hen's brains, which is regarded as a sovereign remedy for neurasthenia and debility. This has been in use for several centuries in the Flowery Kingdom and we have only just discovered cerebrine and cardeine!

Contagious Diseases, New York City.—For the week ending March 11th, from tuberculosis, 178 cases, 202 deaths; typhoid fever, 17 cases, 6 deaths; measles, 280, 15 deaths.

TRANSACTIONS OF FOREIGN SOCIETIES.

British.

LAPAROTOMY FOR HEMORRHAGE—TONSILLITIS AND RHEUMATISM—GAS IN TUBERCULAR ABSCESSSES—ENLARGEMENT OF THE SPLEEN IN MUMPS—ON THE CHOICE OF AN ANESTHETIC—CONGENITAL PYLORIC HYPERTROPHY—DEFINITE MIXTURES OF NITROUS GAS AND AIR OR OXYGEN—TREATMENT OF OZENA BY CUPRIC ELECTROLYSIS—POPULARITY OF THE PESSARY NOT WANING—RECOMMENDATIONS TO LIMIT THE SPREAD OF TUBERCULOSIS.

AT the Clinical Society, January 27th, HUTCHINSON read notes of cases in which he had performed abdominal section without external evidence of injury. A man, aged thirty-two years, was run over and became collapsed. There was abdominal tenderness and distention due to the presence of fluid. On the following day these symptoms were more marked and his temperature was 102° F. Upon opening the abdomen Hutchinson found it full of blood which he removed. No cause for the hemorrhage could be found and the wound was closed. The next day there was again some blood in the abdomen but the patient recovered. He thought that blood in such cases could give rise to trouble and ought to be removed. In a second case there were symptoms of intestinal obstruction in a pregnant woman. Nothing was found in the abdomen except two pints of pale, odorless, straw-colored fluid. The intestines were slightly congested. The origin of the fluid was not ascertained and the abdomen was closed. The following day the patient aborted and soon after died. A large quantity of the same fluid was found at autopsy and a search revealed a minute perforation of the bladder which admitted urine into the peritoneal cavity through an opening an inch above the peritoneal reflection. The perforation was presumably due to an attempt to produce abortion.

LANGTON thought that the abdomen should be opened in cases of concealed hemorrhage, not merely on account of the possible danger from the contained blood, but to protect the patient from the bad effects of internal injury.

ABRAHAM read a paper on rheumatic tonsillitis, basing his remarks upon a large number of cases of chorea, rheumatism, and cardiac disease both in adults and children observed in the last three years. Clinically five varieties of rheumatic throat affection may be distinguished: (1) Faucial erythema which often ushers in an attack of rheumatism. (2) Follicular tonsillitis. (3) Quinsy. No pathologic distinction can be made between this form and the preceding although it is noticed that when patients have repeated attacks they are almost always of the same form, alternations from one variety to the other being rare. (4) An abortive form described by Singer, in which the joint and muscular pains are vague. (5) Chronic rheumatic tonsillitis probably of gouty nature.

One-half of the cases of chorea, two-thirds of those of heart disease, and almost one-half of those of acute rheumatism gave a definite history of throat disease. Bacteriologic examination of the tonsils revealed the constant presence of streptococci and staphylococci. Sim-

ilar organisms were found in urine drawn with every precaution from the bladder. The probability of infection through the tonsils, therefore, is very strong. Many believe that the rheumatic patient is poisoned by the attenuated virus of a germ, which, when fully active, leads to pyemia. The following conclusions were offered: (1) The more common varieties of rheumatic sore-throat fall into two main categories—faucial erythema and tonsillitis proper. (2) Faucial erythema is most common in adults, and rheumatic tonsillitis in children in whom it usually assumes the follicular type, quinsy being more frequent in older subjects. (3) Faucial erythema is an initial manifestation of acute rheumatism and tonsillitis may be the actual primary lesion. (4) Many cases are now definitely on record in which endocarditis has followed a non-scarlatinal tonsillitis unaccompanied by joint pain. In numerous other instances the tonsillitis has immediately preceded an attack of arthritis or of chorea. (5) The presence of the same micro-organisms in the tonsils, joints, blood, and urine is evidence in favor of the participation of pyogenic cocci in the etiology of rheumatism.

CARR suggested that an ordinary tonsillitis might attack a rheumatic as well as any other patient. In some of the cases mentioned there was an interval of years between the sore throat and the development of rheumatism. He had not been able to convince himself that antirheumatic remedies have any curative action upon tonsillitis.

At the meeting of February 10th, SPENCER described an unusual case of tubercular cavities in the lungs, giving rise to gaseous metastatic abscesses in the right pleura, the back, and the upper part of the left thigh. The abscess in the thigh was opened first and was found to contain gas and pus having a fecal odor. It extended through the greater sacrosciatic notch into the pelvis but not to the near neighborhood of the bowel. Later the patient developed an acute effusion into the right pleural cavity, and the fluid aspirated had a fecal odor and contained pus-cells. About four months later the patient died. Both lungs were filled with tubercles and there was one large cavity. There was also extensive caries of the ribs on both sides. Colon bacilli were found in the pus.

At the Harveian Society, February 2d, EWART showed a boy who had just recovered from a mild attack of mumps on the left side. The only complication was an enlargement of the spleen which persisted for several days and gradually subsided as the parotid gland returned to its normal size. There was no fever, nor symptoms referable to the spleen. At its maximum the spleen measured 6.5 inches horizontally and 5 inches vertically. The blood was stained for micro-organisms with negative results.

A discussion on the choice of an anesthetic at the Society of Anesthetists, January 20th, showed that the members were as far as ever from an agreement as to the relative merits of ether and chloroform under different circumstances. Whatever anesthetic is chosen should not be given hurriedly, nor by an inexperienced person. JONES said that in every case the surgeon should place the facts in hand before the anesthetist and allow him to make the choice of the anesthetic.

At the Pathological Society, February 7th, STILL reported three cases of congenital hypertrophy of the pylorus, all occurring in boys, with death in twelve to fifteen weeks after birth. The symptoms were vomiting, constipation, and increased gastric peristalsis which could be seen through the abdominal wall. In all three patients the thickened pylorus was palpable before death. In all three the thickening was chiefly muscular, and the lumen was normally patent. The lumen of the normal pylorus at birth often measures only 3.5 to 4 mm. ($\frac{1}{4}$ to $\frac{1}{2}$ of an inch), so that one must speak with caution of slight degrees of hypertrophy. He considered the condition a congenital one, but that disturbance of function was the exciting cause. There is every reason to believe that some patients recover.

CAUTLEY, who showed specimens of the same trouble from three infants much younger than those reported by Still, expressed the opinion that the trouble was purely an intra-uterine one.

At the Royal Medical and Chirurgical Society, February 14th, HEWITT read a paper on the effects upon man of definite mixtures of nitrous oxid and air, and nitrous oxid and oxygen. Pure nitrous oxid causes deep stertorous breathing, cyanosis, and anoxic convulsions. These may be avoided by mixing oxygen or air with the gas, but there is no fixed proportion which will best answer for all patients. The best anesthesia is obtained by commencing with a mixture of gas with two per cent. of oxygen, and increasing the latter gradually until eight or ten per cent. is employed. The next best results to these are obtained with fixed mixtures of gas and oxygen, 5, 6, or 7 per cent. for males; 7, 8, or 9 per cent. for women and children. Next after these results gas and air, 14 to 18 per cent. of the latter for men, and 18 to 22 per cent. for women and children have been proved to be best.

At the Edinburgh Medico-Chirurgical Society, February 1st, MCBRIDE described the mode of treatment of ozena by cupric electrolysis. Four of eight unselected subjects were cured and remained so for eighteen months. The others had been recently treated. Cocain was employed. With a current of 10 milliamperes a copper needle was attached to the positive pole, and inserted into the inferior or middle turbinate bone while the platinum or steel needle was inserted into the septum. There was little or no pain at the time or afterward. The good effects might be due to the copper as well as to the electricity.

TURNER said that the interest in the matter lies in the rationale of the treatment. It is not bactericidal, as the same organisms are found after treatment as before. Moreover, with treatment on one side only, both sides of the nostrils improve. Perhaps the benefit comes through an improved trophic condition. In a similar manner the serum treatment might stimulate secretion and thus cause the crusts to be thrown off.

At the Edinburgh Obstetrical Society, February 8th, BALLYNTINE read a paper on the position of the pessary in gynecologic practice. From the instrument-makers he learned that pessaries are purchased more and more, but that the demand is now practically for only two patterns,

the Smith modification of the Hodge, and the simple rubber ring containing a watch spring. The demand for currettes, especially Martin's, has been remarkable, while the popularity of caustic holders and instruments of that type has decreased.

At the Liverpool Medical Institution, February 9th, the tuberculosis committee presented a report, which was adopted, recommending the following measures: The diffusion of information concerning the disease; the arrest of tuberculosis by diminishing the sources of infection; the provision of sanatoria and special hospitals; the voluntary notification of infected houses and the disinfection of the same by the health authorities. The committee was of the opinion that the public was not yet ready for compulsory notification. Great satisfaction was expressed at the enormous decrease in tuberculosis within the past generation, and confidence was shown that with a reasonable degree of attention to the needless spread of the disease, the decrease could be continued at even a faster rate than in the past.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.—SECTION ON GENERAL MEDICINE.

Regular Meeting, Held Tuesday, February 21, 1899.

THE Chairman, DR. LOUIS FAUGERES BISHOP, announced the subject of the evening as

RABIES.

DR. FOLLEN CABOT demonstrated a guinea-pig and a rabbit which had been inoculated with the disease. This was the sixth day after the inoculation, and both animals showed signs of the disease, but it was the dumb or paralytic form, not the violent one. Both animals would continue in their quietude very probably until death, though sometimes there was, even in the midst of the paralytic form, sudden violent outbursts. Dr. Cabot then read a paper, entitled

RABIES AND ITS PREVENTIVE TREATMENT; AN ANALYSIS OF CASES,

which will be found on page 321.

A paper, entitled

CLINICAL CASES OF HYDROPHOBIA IN ANIMALS,

by DR. S. R. JOHNSON and PROFESSOR H. D. GILL, owing to their unavoidable absence, was read by the secretary. They described the symptoms of rabies, especially in dogs. The animals usually become markedly changed in disposition. They become noticeably glum, moody, and shun the light and all companionship, or they become restless and snappy. There is a lurid glare in the eye even of animals quiet hitherto, that is very characteristic. There is a change in the animal's bark easily detected by those familiar with it. Often it becomes metallic; at times, again, is a low howl that is kept up persistently. One dog recently had been operated on for tumor six months before its attack, and had been known as an extremely quiet and patient animal. During its attack it restlessly paced the cage, biting at the

bars, barking in a metallic, brassy tone almost unceasingly, never letting up in its activity. In this case the New York Board of Health had decided by inoculation experiments on other animals that true rabies was present.

In another dog the first symptoms had been a dazed look, a tendency to tear things never before noted; it had ruined a lot of lace curtains, and was copiously dribbling from the mouth. When put in a dark cellar by its owner it had gotten worse, and on being brought to the veterinary hospital it had immediately been caged. In the cage it bit through and through its own foot. This also proved on inoculation to be true rabies.

A third animal was excited and restless, and bayed like a hound, quite differently from its usual bark. This change of voice, so to say, was, as is often the case, the first suspicious sign. Then came increased nervousness and restlessness, followed by refusal to take water. These symptoms were followed by a violent stage almost characteristic of rabies.

DISCUSSION.

DR. R. J. WILSON spoke of the necessity and also the possibility of prophylaxis for rabies. Much has been accomplished in this matter in Paris, so that practically there has been no epidemic of cases there in recent years. If we had adequate dog laws rigidly enforced, as in Germany, it is very probable that we could extirpate the disease in America for some time, at least until the importation of fresh infective material. At present the plain duty seems to be to isolate Staten Island at least for some time, *i. e.*, not permit its dogs to wander out or permit the bringing in of dogs. There have been undoubtedly a series of cases on the island of persons having been bitten by rabid animals.

DR. MAURICE ASHER of Newark, N. J., detailed his own experience with a pet dog that bit himself and several members of his family, and was proved later to be rabid. The first symptom of the dog's disorder was restlessness and a distinct, easily noticeable change in its bark. The bark was at times short, sharp, and metallic; at other times a long, drawn-out howl. It did not sleep for three nights, refused the usual food and drink, swallowed other small objects, and was noticed to eat a great deal of snow. Of its own accord it did not bite, but had bitten four people when annoyed by their commands or when they attempted to do something for it that the animal misunderstood. It developed a mania for tearing things, carpets, curtains, table-cloths, etc. Inoculation of parts of its medulla into other animals after it had been killed by chloroform proved that it had rabies. During its irritable stage it had bitten two other dogs whose owners or places of residence Dr. Asher does not know.

All the patients bitten by the animal took the Pasteur preventive treatment, and Dr. Asher described his feelings during the time. The injections are painful directly proportionate to the amount of liquid injected. The local pain is quite acute for some minutes. All in Dr. Asher's household noticed that though their appetite and sleep was not disturbed, they were much more irritable during the time of the injections than they had been before. No

local reactions followed at the site of injection except a passing induration scarce worth noting.

DR. DOUGLASS of Morristown, N. J., next described a case of hydrophobia that occurred recently in his practice. The patient, a farmer, was bitten by his own dog, and the animal was killed. He did not believe in hydrophobia, and took no precautions. After about five weeks he began to develop certain suspicious difficulty in swallowing, and an impending sense of evil came over him. After a few days he could not drink, and attempts to swallow were followed by spasm of the constrictor muscles and other muscles of deglutition. Then respiration was disturbed by spasmodic conditions. At first Dr. Douglass thought he had to deal with a case of lyssophobia, an exaggerated fear of hydrophobia that sometimes leads in people who have been exposed by animal bites to infection with rabies, to nervous symptoms that simulate true hydrophobia. But the symptoms proved steadily progressive and spasms became more general. Finally paralytic symptoms supervened, and after two days of paraplegia death occurred from heart failure. The autopsy revealed congestion in the cortex in the pons and in the floor of the fourth ventricle, also in the medulla, and in the membranes of the cord. Suspicious conditions, but not conclusive. A portion of the medulla inoculated into an animal produced true rabies.

DR. FROTHINGHAM of Boston, Pathologist to the Massachusetts State Cattle Commission, said that he has been for a long time a believer in the existence of rabies in this country in animals, and in its communicability and actual communication to man. His records show 32 cases of suspected rabies examined, 21 of which gave positive evidence of the disease. As he sees it at the laboratories of the Massachusetts Cattle Commission it is usually in the paralytic form. There are no typical post-mortem lesions of the disease as yet known. The only absolutely certain means of recognizing the disease is by the inoculation of a portion of the medulla of the suspected animal into another animal and waiting the result.

It must be remembered that there may be some other pathological condition present in an animal and yet rabies exist too. The other affection may be sufficient of itself to cause death and yet that event be precipitated by infection with rabies. Worms in the hearts of dogs sometimes simulate the symptoms of rabies though they may remain entirely latent for years.

Foreign bodies in the intestinal tract, tumors of the brain, certain parasites that gather in the external ear, may produce symptoms that will deceive a trained veterinarian. Inoculation is the only absolutely sure method of recognizing the disease; post-mortem conditions like perivascular infiltration of the substance of the brain and cord usually are found in rabies but they may be caused by any toxic condition.

The prophylaxis of rabies requires the enforcement of strict license laws for dogs. Laws that will make identification easily possible wherever the animal may be found. Suspected districts should be quarantined for three months, all strange or unclaimed animals gotten rid of, and all other animals muzzled for that length of time. If this

could be done effectively, in a year we would be rid of hydrophobia in this country completely.

DR. W. H. PARK thought that the assurance that we had hydrophobia in this country would lead to proper precautions when the danger was understood. The Society for the Prevention of Cruelty to Animals had done something most inadvisable in falsely spreading the information that rabies did not exist on Staten Island. This fostering of doubt led to the failure to enforce even the already existing laws and so permitted the spread of the disease.

DR. HUDDLESTON said that the action of the Society for the Prevention of Cruelty to Animals in refusing to allow portions of the medulla to be used for inoculations seemed to him most inhuman. The mental suffering of three human beings for months because of the uncertainty had been weighed against the suffering of an animal or two for a few days and the animals' rights considered the better. He asked Dr. Cabot for the names of prominent medical men who acknowledged the existence of hydrophobia in America.

Dr. Cabot said that all the prominent pathologists to whom he had written in the matter had assured him of their certainty of its existence here, and a number of clinicians who had had experience with it did likewise. All the names he could not recall, but the list included such men as Welch, Councilman, Osler, Prudden, and other leaders of medical thought.

REVIEWS.

URIC ACID AS A FACTOR IN THE CAUSATION OF DISEASE. By ALEXANDER HAIG, M.A., M.D., F.R.C.P. Fourth edition. Philadelphia: P. Blakiston's Son & Co., 1898.

A FOURTH edition of Haig's "Uric Acid as a Factor in the Causation of Disease" was issued by the publishers twenty months after the appearance of the third edition. This of itself is proof of the great interest taken in the study of uric acid.

There are fashions in pathology as well as in millinery. The history of medicine is replete with examples of the almost universal interest of the profession in one particular subject of investigation to the exclusion of others, and of great and rapid advancement in the knowledge of the subject for the time popular.

To those acquainted with the work and the style of Haig little need be said of the fourth edition. It is a larger book. It is fuller of the data upon which he bases his conclusions. The theory is the same, and the method of presenting it is the same. To the reader there is a certain charm in the familiarity and frankness of the author which is irresistible. He is dogmatic, but he gives one all the arguments upon which he has based his dogma, and he does so in a way certainly most unconventional. The book is divided into chapters, but the first part of it need not have been, so far as the nature of the discussion is concerned. His "laws" or conclusions are given early, and appear and reappear with such frequency that there is no mistaking his meaning. That he assigns

to uric acid a most exalted influence over the destinies of man is exemplified in his new answer to that chestnutty question: "Is life worth living?" "That depends on uric acid!" he says, on page 249, and evidently misses entirely the humor of our own Holmes' answer, "That depends on the liver," for he discusses this most seriously.

That he has elucidated a pathologic law capable of almost universal application is inferred from the passage on page 142: "If my premises are good, and my deductions sound, and if uric acid influences the circulation to the extent which I have thus been led to believe that it does, it follows that uric acid really dominates the function, nutrition, and structure of the human body to an extent which has never yet been dreamed of in our philosophy, and in place of affecting the structure of a few comparatively insignificant fibrous tissues in which it is found after death, it may really direct the development, life history, and final decay and dissolution of every tissue from the most important nerve-centers and the most active glands, to the matrix of the nails and the structure of the skin and hair."

From beginning to end he is an advocate of a diet "uric-acid free," as he calls it, to counteract the effect of the ills already wrought. This "uric-acid free" diet is a diet that excludes all flesh and fish, and things that contain them or their extractives, tea, coffee, cocoa, and chocolate, because of the similarity of the alkaloids of these substances to the chemic formula for uric acid, and all acids, including beers and wines. In his own case he excludes also eggs, because he has found that, while he can not prove that they contain uric acid, he can prove that his own output of uric acid is increased when eggs are used as an article of diet. He obtains his supply of nitrogenous material from milk and cheese, in addition to ordinary vegetables and bread-stuffs.

As an eliminant of uric acid from the blood, he has this to say of lithia (page 82). "Lithia, as I have pointed out elsewhere, though said to be a beautiful solvent of uric acid in a test-tube, yet when given to the human subject by the mouth never reaches the uric acid at all, because it at once forms an insoluble compound with the phosphate of soda in the blood, thus removing from that fluid one of the natural solvents of uric acid, and diminishing its power of holding uric acid in solution." Those who have used lithia freely have found clinically that the results were not commensurate with the theoretical reputation of the drug, and that in efficient doses it is the least agreeable to the stomach of all the alkalies.

Haig's book is not a model of lucid English, of precision in the use of words, or of a scientific and orderly presentation of the subject. But it is a mine of information, and, taken at his own estimate, as a contribution to the study of this most important subject it is of great value, and should be most carefully studied by every physician.

SKIAGRAPHIC ATLAS, showing the development of the bones of the wrist and hand. By JOHN POLAND, F.R.C.S. London: Smith, Elder & Co. New York: G. P. Putnam's Sons, 1898.

THIS atlas contains the admirable Roentgen pictures

of the wrist and hand, at each year from the first to the seventeenth, taken from the author's larger work on "Traumatic Separation of the Epiphyses." A brief account of the anatomy and development of the bones of the forearm and hand is added to the descriptive notes.

ATLAS OF SYPHILIS AND THE VENEREAL DISEASES, including a brief treatise on the pathology and treatment. By PROFESSOR DR. FRANZ MRACEK of Vienna. Authorized translation from the German. Edited by L. BOLTON BANGS, M.D., Consulting Surgeon to St. Luke's Hospital, and the City Hospital, New York. Philadelphia: W. B. Saunders, 1898.

THIS is one of the best volumes in Lehmann's well-known series. It is far above many of the more pretentious atlases that have from time to time appeared. The plates, of which there are 71, are admirable, the coloring leaving nothing to be desired. They show all the ordinary phases of syphilitic manifestations, and of the chancroid, and also include some of the more unusual conditions, which will be specially valuable to those removed from clinical centers. Appended to the plates is a short treatise on syphilis, chancroid, and gonorrhea. For its size, this is remarkably full and accurate. The translation has been well done. We can object only to the too close imitation, in places, of the German, especially in the nomenclature of some of the lesions.

A TEXT-BOOK OF PHYSIOLOGICAL CHEMISTRY. By OLAF HAMMERSTEN. Authorized translation from the third German edition. By JOHN A. MANDEL, Professor of Inorganic Chemistry and Physics, and Adjunct Professor of Physiological Chemistry in the University and Bellevue Hospital Medical College. New York: John Wiley & Sons, 1898.

THE author in his introduction bases the forces going on in the syntheses accomplished by the plant on the *vis viva* of the sun, this force being transformed "into the potential energy or chemical tension" of the substances thus produced. We find in these few words a correlation of the laws and phenomena of physics and chemistry, which enter so closely into the problems of both plant and animal life. Viewed from these broad standpoints, the processes going on in the animal being, both normal and pathological, present to us a different aspect, and their analysis in terms of general science is more comprehensive to the investigator. The admirable work of Hammersten has, as in the first edition of this work, been translated in a most painstaking manner, following the author's text and arrangement, as in the original work.

Chapter I. deals with the new developments in this science, and gives us a *résumé* of the researches along these lines during the past few years. In Chapter II. the author classifies the proteids into three large groups, simple and compound proteids and albuminoids, a most simple and admirable classification, each group of which is distinct from the other. Not too much can be said of this work, the two examples noted being only a sample of the value of the same.

This book is more than a text-book as the name implies. As a reference book, both on account of its wide

scope and the carefully selected authorities from which its facts are gleaned, it should be acceptable to all advanced workers in this field. An excellent index covering forty-pages further enhances its value.

A MANUAL OF PHYSIOLOGY, WITH PRACTICAL EXERCISES. By G. N. STEWART, M.A., D.Sc., M.D., Edinburgh, Professor of Physiology in the Western Reserve University. Third edition. Philadelphia: W. B. Saunders, 1898.

THIS new edition of Professor Stewart's Physiology contains considerable new material, and several new and very excellent plates and illustrations. The book is arranged especially as a laboratory guide, for which the practical exercises are intended. Nevertheless the text loses none of its value as a reference work, which, indeed, the exercises themselves enhance.

The chapter on metabolism, nutrition, and dietetics is up to date, and the physiology of the nervous system is interestingly expounded. The practical exercises, chemic, physical, microscopic, and anatomic, are arranged with great care and in great detail, and follow the order of the text, chapter for chapter.

THE LECTURES OF AURELIO BIANCHI ON THE PHONENDOSCOPE AND ITS PRACTICAL APPLICATION, Together with Special Articles by FELIX REGNAULT, M.D., and M. ANASTASIADIS, M.D., and translated by A. GEORGE BAKER, A.M., M.D. Philadelphia: George P. Pilling & Son, 1898.

THE publication of these translations comes too late to attract but limited attention. The phonendoscope has been already thoroughly studied in America, and, for the most part abandoned as an overestimated instrument. Those, however, who are interested in the claims and demonstrations of Bianchi will find them in this book, freely illustrated by photograph, diagram, and text.

NURSING: ITS PRINCIPLES AND PRACTICE. BY ISABEL ADAMS HAMPTON, late Superintendent of Nurses and Principal of the Training-School for Nurses, Johns Hopkins Hospital. Revised Edition. Illustrated. Philadelphia: W. B. Saunders, 1898.

WE have always held the belief that the nurses in our training-schools received, relatively, too little practical; and too much theoretical instruction. A perusal of this work confirms this impression. The trained nurse does not need to know the signs and symptoms of pregnancy nor the differential diagnosis between the acute infectious diseases, as they are outlined in this work; she need not know anything of bacteriology or of the properties of formalin or comol. This information is simply a burden to her mind to the exclusion, sometimes, of the proper way of placing a patient in Sims' position or of properly giving a hypodermic injection. This is not only our own impression, but the burden of these statements has been repeatedly stated to us by graduate nurses who appreciate their lack of practical experience in the small details of their practice.

But, if the authoress has committed a sin in this regard, it is not fair to hold her responsible for a system

which regards the nurse as a semidoctor, or, at least, as a pseudo-doctor. She has given, down to the minutest detail, all that a well-trained nurse should know. Her language is clear, concise, and pointed, and it is earnestly to be hoped that every nurse, in or out of hospital, may read and thoroughly assimilate the contents of this book. They will certainly be better practical nurses for knowing and practising much that is contained within its covers.

THERAPEUTIC HINTS.

Treatment of Diphtheria of the Nose and Throat.—In outlying districts where antitoxin is not obtainable and simple irrigation may be impracticable, local antiseptic measures become imperative. A combination of remedies is recommended by ENGLAND who, under such circumstances, has employed the following with excellent results:

℞ Trichlorid of iodine	gr. lxxx
Saccharin	gr. viii
Boiled water	℥i.

This is used as a gargle ten times a day, diluted ten times with water. After gargling a suitable quantity the following powder is blown into the nose:

℞ Powdered soziodolate of sodium	1 part
Sublimed sulphur	3 parts.

In addition from 15 to 40 drops of the ethereal tincture of perchlorid of iron is given four times a day.

Naphthalin in the Treatment of Tape- and Pinworms.—The following formulæ are recommended:

1. For tapeworm in adults:

℞ Naphthalini	gr. xv
Ol. bergamii	gtt. i.

M. Sig. For one dose on an empty stomach. One ounce of castor oil is to be taken immediately afterward.—*Mirovitch*.

2. For tapeworm in children:

℞ Naphthalini	gr. ss-i
Ol. ricini	$\frac{3}{4}$ ss
Ol. bergamii	gtt. ii.

M. To be taken in one dose on an empty stomach.—*Mirovitch*.

3. For pinworms in adults:

℞ Naphthalini	gr. lxxv-3 iss
Ol. olivæ	$\frac{3}{4}$ ii-iss.

M. Sig. For one rectal injection.—*Minerbi*.

4. For pinworms in children:

℞ Naphthalini	gr. xvi-xxiv
Ol. olivæ	$\frac{3}{4}$ i-ii.

M. Sig. For one rectal injection.—*Minerbi*.

For Acute Cystitis.

℞ Potassii citrat.	$\frac{3}{4}$ iss
Spts. etheris nitrosi	3 ii
Ext. buchu fl.	$\frac{3}{4}$ i
Syr. simpl.	q.s. ad. $\frac{3}{4}$ iv.

M. Sig. Two teaspoonfuls every three hours.

THE GREAT FACT IN MODERN MEDICINE:

"The Blood is the Life,"

And Where Nature fails to make Good Blood,
WE CAN INTRODUCE IT.

BOVININE is Bovine Blood Unaltered from the Arteries of the Bullock;
The Universal Auxiliary of Modern Medicine and Surgery,
and the TRUE "ANTITOXIN" of Healthy Nature.

In the more enlightened progress of Modern Medicine, "Blood-letting" has given place to Blood-getting.

Aye. Get Good Blood—but How? Not by the Alimentary Process. It has already failed to do its work (else the patient would not be sick); and in acute disease must not even be allowed to do the work it can. Stimulate as you will, the whole sum of the patient's alimentary power when fully forced into play, is unable to keep up the nourishing and supporting contents of the blood. There is absolutely but one thing to do; and, thank God, that can be done, usually with success, as ten-thousand-fold experience has proved. That one thing is this: where Nature fails to PRODUCE good and sufficient Blood, WE CAN INTRODUCE IT from the arteries of the sturdy bullock, by the medium of BOVININE.

The vital activity of this living blood conserve rests on no man's assertion: it speaks for itself, to every properly equipped physician who will test its properties microscopically, physically, or therapeutically.

TRY IT IN PRACTICE.

Try it in Anæmia, measuring the increase of red cells and hæmaglobin in the blood as you proceed, together with the improving strength and functions of your patient.

Try it in Consumption, with the same tests from week to week.

Try it in Dyspepsia or Malnutrition of young or old, and watch the recuperation of the paralysed alimentary powers.

Try it in Intestinal or gastric irritation, inflammation, or ulceration, that inhibits food itself, and witness the nourishing, supporting and healing work done entirely by absorption, without the slightest functional labor or irritation; even in the most delicate and critical conditions, such as Typhoid Fever and other dangerous gastro-intestinal diseases, Cholera Infantum, Marasmus, Diarrhoea, Dysentery, etc.

Try it per rectum, when the stomach is entirely unavailable or inadequate.

Try it by subcutaneous injection, when collapse calls for instantaneous blood supply—so much better than blood-dilution!

Try it on Chronic Ulceration, in connection with your antiseptic and stimulating treatment (which affords no nourishment) and prove the certainty and power of topical blood nutrition, abolishing pain, stench, and FEAR, and healing with magical rapidity and finality.

Try it in Chronic Catarrhal Diseases; spraying it on the diseased surfaces, with immediate addition of peroxide of hydrogen; wash off instantly the decomposed exudation, scabs and dead tissue with antiseptic solution (Thiersch's); and then see how the mucous membrane stripped open and clean, will absorb nutrition, vitality and health from intermediate applications of pure bovinine.

Try it on the Diphtheritic Membrane itself, by the same process; so keeping the parts clean and unobstructed, washing away the poison, and meanwhile sustaining the strength independently of the impaired alimentary process and of exhaustive stimulants.

Try it on anything, except plethora, or unreduced inflammation; but first take time to regulate the secretions and functions.

Try it on the patient tentatively at first, to see how much and how often, and in what medium, it will prove most acceptable—in water, milk, coffee, wine, grape, lemon or lime juice, broth, etc. A few cases may even have to begin by drops in crushed ice.

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Medical Letters may be addressed to:

Mr. FELLOWS, 48 Vesey Street, New York.